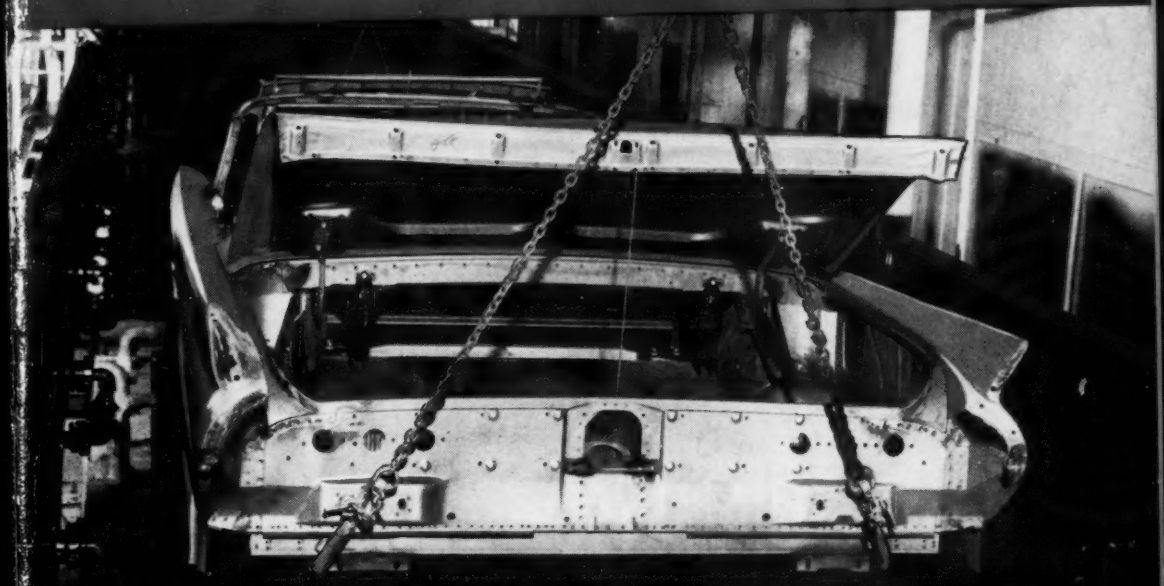
products finishing

MARCH
1959



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finishes on metal products

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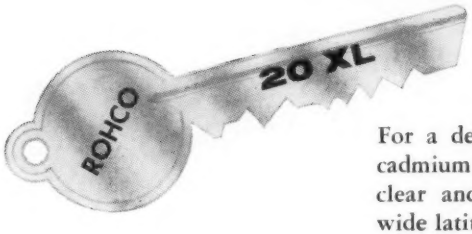

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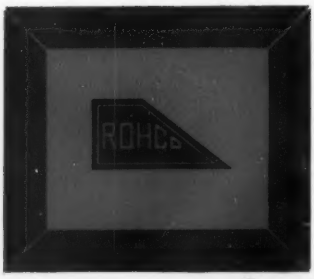

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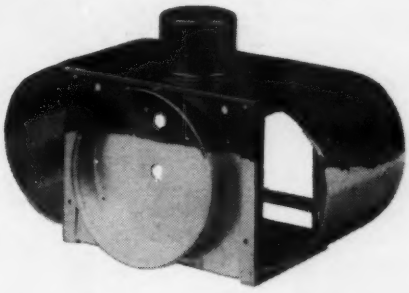

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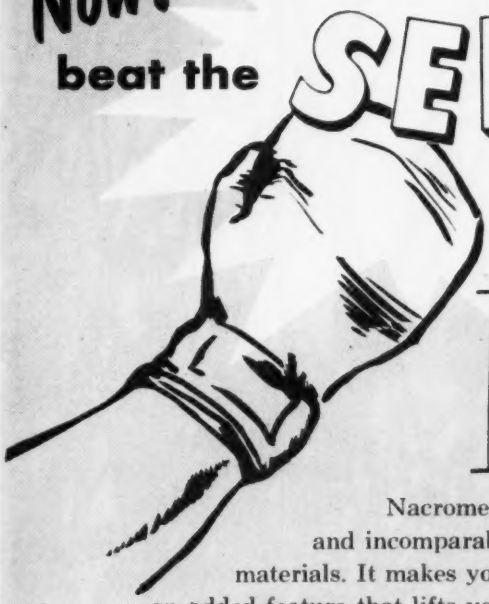

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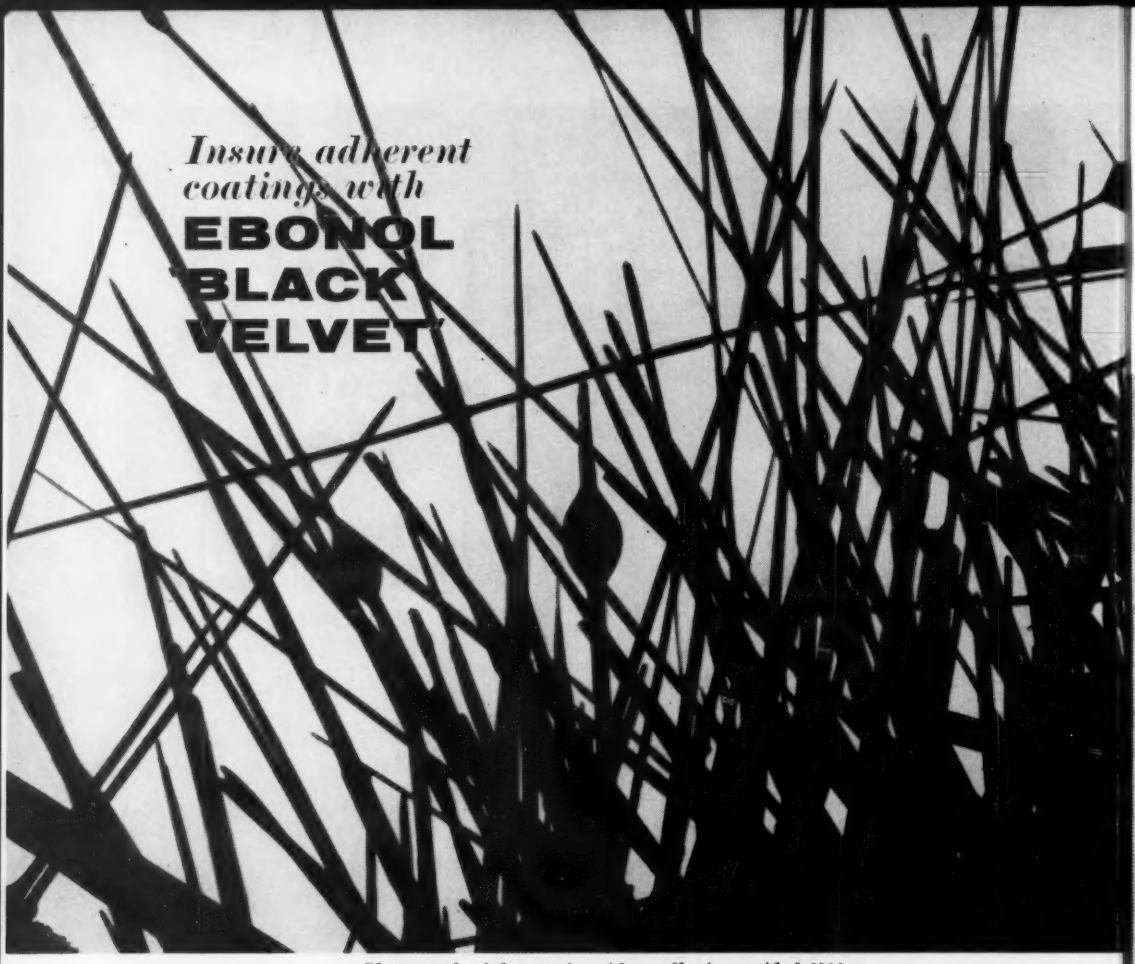

Photograph of the cupric oxide needles (magnified 6500x) produced by immersion of copper part in hot solution of Ebonol "C" Special.

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products finishing

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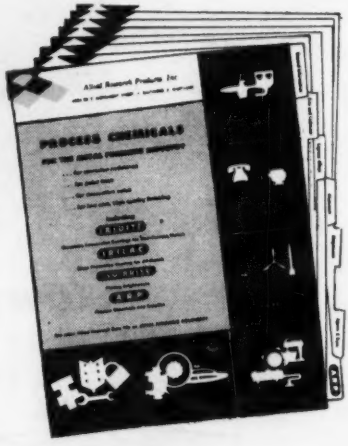

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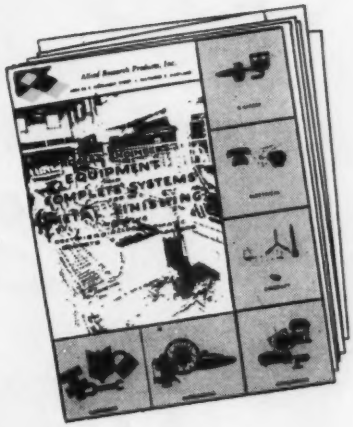

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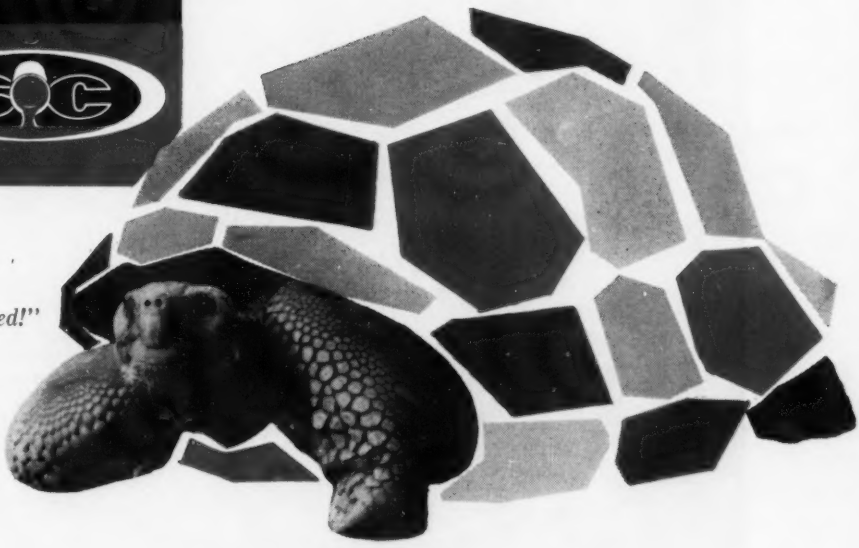

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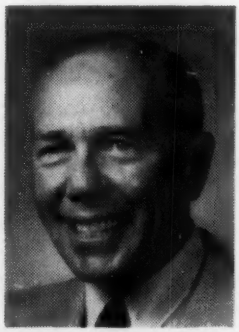

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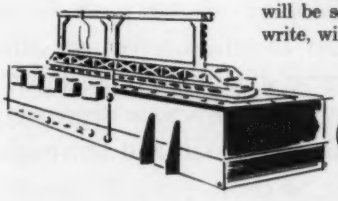
1. Complete machine inspection without charge to you.
2. Immediate and complete quotation, if work or parts are needed.
3. Udylite factory supervision in your plant.

All three Project Alert plans are working. And all their advantages are yours for the asking. Your Udylite man will be seeing you soon. But if you need prior service, write, wire or call us *today*.



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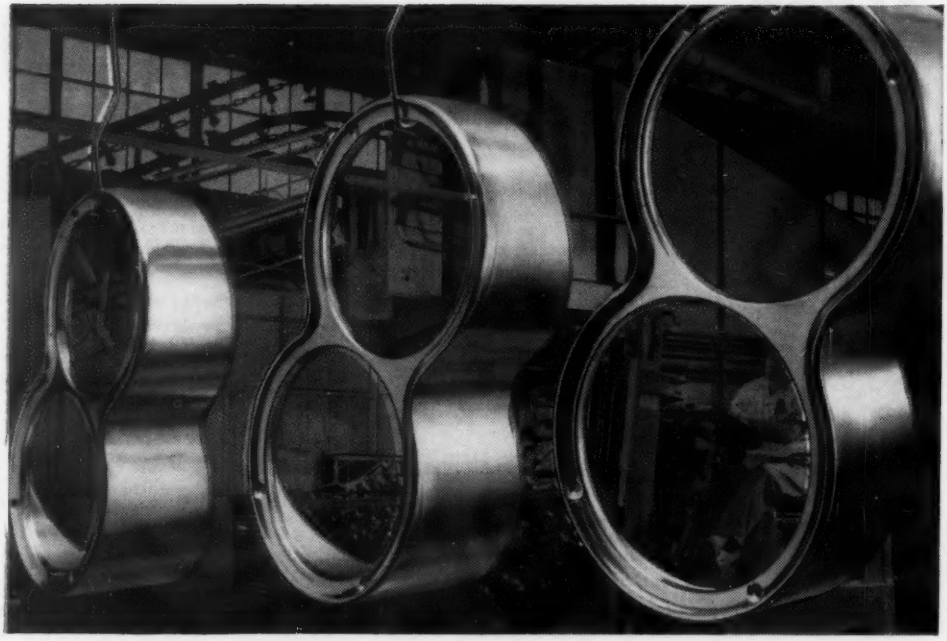
DOW

metal cleaning report no. 1

case histories from your Dow Solvents Distributor



Aluminum headlight assembly being cleaned in vapors of Dow trichloroethylene.

DOW FIELD-LAB TEAM SOLVES DEGREASING RIDDLE

Bay City, Mich.—Manufacturer of auto parts reported faulty still was causing dirty distillate in his trichloroethylene degreasing operation. Dow field team went in, did thorough check of whole operation. Discovered not one, but three trouble spots: (1) Water separator on degreasing unit working improperly; (2) Excess water in stamping oil on parts being cleaned (Dow lab finding); (3) Faulty steam injection valve on still. Valve replaced, water separator repaired, and new stamping oil put in use. Plant now getting good cleaning action first time through vapor degreasing unit using Dow trichloroethylene. Key to solution was skill and thoroughness of trained Dow solvents team.

Time and time again, Dow solvents distributors help manufacturers improve cleaning and stripping operations. And for two good reasons: (1) Dow offers the widest line of chlorinated solvents for modern industry; (2) Dow backs its distributors to the hilt with technical information and on-the-job help. Chances are good that one of the many Dow industrial solvents can help smooth out your operations, too. Dow solvents are made to high purity standards and each is designed to do a specific job and do it well. For help on your metal cleaning problems call on the nearby Dow solvents distributor. His name is listed on the next page.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

NEW COLD CLEANER SAVES BIG DOLLAR

Detroit, Mich.—Expensive fluorinated cleaner was being used by manufacturer to remove paraffin oils from refrigeration compressors. Key requirement: clean parts without damaging insulation varnish on motor windings. Dow solvent team invited in. Observations pointed to Chlorothene® (Dow 1,1,1-trichloroethane, inhibited). Compressors cleaned with Chlorothene and air purged immediately after. Lab tests proved Chlorothene cleaned effectively, safely, without damaging insulating varnish. Company switched to Chlorothene, effected real savings and got safe, sure cleaning.

PERCHLOROETHYLENE KEY

Los Angeles, California—Nationally known lock manufacturer was having difficulty cleaning plated metal parts. Door handles and face plates were coming off trichloroethylene degreasing line with marring water spots. Dow called in on problem. Recommended switch to Dow perchloroethylene. Higher boiling point and longer cleaning action resulted in spotless parts. Lock maker now saving time, money, with efficient perchloroethylene degreasing.

FREE . . .
TECHNICAL SERVICE
on 24-hour notice

Your Dow solvents distributor will gladly help you with any problems you're experiencing with metal cleaning solvents. He'll have a trained solvents specialist en route to your plant within 24 hours after your call is received!

Ask your Dow solvents distributor for details.

STOP-OFF LACQUER STRIPPED FAST

Stratford, Conn.—Major aircraft engine manufacturer was having trouble removing stop-off lacquer used on steel and aluminum parts selectively plated. Parts were being soaked and rinsed in flammable thinner. Process was slow, results unsatisfactory. Dow distributor suggested vapor degreasing with Dow methylene chloride. Parts were run through vapors, then rinsed with spray lance application of m.c. System worked. Lacquer stripped off clean in matter of minutes. Flammability hazard eliminated. Problem marked solved.

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DOW

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LETTER KEYS:

(C)—Chlorothene®; **(M)**—Methylene Chloride; **(P)**—Perchloroethylene (Industrial); **(T)**—Trichloroethylene

ALABAMA

BIRMINGHAM—Wittichen Chemical Company (C M P)
BIRMINGHAM—F. H. Ross and Company (C M P T)
MOBILE—Barada and Page, Inc. (C M)
MOBILE—McKesson & Robbins, Inc. (C M P T)
MOBILE—F. H. Ross and Company (C M P)
MONTGOMERY—Wittichen Chemical Company (C M P)

ARIZONA

PHOENIX—Braun Chemical Company (C M P T)
PHOENIX—Western Chemical Company (C M P)
TUCSON—Western Chemical Company (C M P)

CALIFORNIA

LOS ANGELES—Braun Chemical Company (C M P T)
LOS ANGELES—McKesson, Mefford Chemical Division (P)
LOS ANGELES—Pomaco, Inc. (P T)
OAKLAND—B. N. Meacham Company (C)
SAN DIEGO—Braun Chemical Company (C M P T)
SAN DIEGO—Buel Town Company (T)
SAN FRANCISCO—Braun-Knecht-Heimann Co. (C M P T)
SAN FRANCISCO—Phil L. Dostal Company (P)
SOUTH GATE—American Mineral Spirits (P)

COLORADO

DENVER—Braun-Knecht-Heimann Company (C M)
DENVER—Chemical Sales Company (C M P T)
DENVER—Mine and Smelter Supply Company (C M P T)
GRAND JUNCTION—C. D. Smith Co., Chemical Division (C P T)

CONNECTICUT

NEW HAVEN—H. Krevit and Company, Inc. (P T)
SHELTON—Axton-Cross Company (C M P T)
SOUTH NORWALK—McKesson & Robbins, Inc. (C M P T)

FLORIDA

JACKSONVILLE—F. H. Ross and Company (C M P T)
JACKSONVILLE—Amica Burnett Chemical Co. (C M P T)
MIAMI—Amica Burnett Chemical Company (C M P T)
MIAMI—Biscayne Chemical Laboratories (C M P T)
ORLANDO—Atlantic Chemicals, Inc. (C M P T)

GEORGIA

ATLANTA—McKesson and Robbins, Inc. (C M P T)
ATLANTA—F. H. Ross and Company (C M P T)
ATLANTA—Southern States Chemical Company (C M P T)
COLUMBUS—F. H. Ross and Company (C M T)
DUBLIN—Textile Aniline Chemical Company (T)

IDAHO

BOISE—Van Waters and Rogers, Inc. (C M P)

ILLINOIS

AURORA—River Valley Chemical Company (C M P T)
CHICAGO—Central Solvents and Chemicals (C M P)
CHICAGO—C. P. Hall Company (C M P T)
CHICAGO—Keystone Aniline and Chemical Co. (C P)
CHICAGO—McKesson & Robbins, Inc. (C M P T)
CHICAGO—Joseph Turner and Company (C M P T)
DECATUR—McKesson & Robbins, Inc. (C M P T)
EFFINGHAM—Wabash Independent Oil Company (P T)
PEORIA—McKesson & Robbins, Inc. (C M P T)
ROCKFORD—Industrial Oil and Chemical Company (C)
ROCKFORD—Viking Chemical Company (C M P T)

INDIANA

EVANSVILLE—Charles Leich and Company (P)
FT. WAYNE—Hoosier Solvents and Chemicals (C M P)
FT. WAYNE—Inland Chemical Co. (C M T)
INDIANAPOLIS—Hoosier Solvents and Chemicals (C M P)
INDIANAPOLIS—Wm. Lynn Chemical Company (C M P)
INDIANAPOLIS—Lynn Solvents Corporation (T)
INDIANAPOLIS—Ulrich Chemical Company, Inc. (T)
KOKOMO—Plating Products, Inc. (P T)
LOGANSPORT—Plating Products, Inc. (P T)
SOUTH BEND—Inland Chemical Co. (C M P T)
SOUTH BEND—Stevens Oil Company (C M P)

IOWA

BETTENDORF—Barton Naptha Company (C M P T)
BURLINGTON—McKesson and Robbins, Inc. (C M P T)
CEDAR RAPIDS—McKesson and Robbins, Inc. (C M P T)
COUNCIL BLUFFS—Barton Solvents, Inc. (C M P T)
DES MOINES—Barton Naptha Company (C M P T)
SIOUX CITY—McKesson and Robbins, Inc. (P)
SUMNER—Overton Chemical Sales (C)

KANSAS

WICHITA—Barada and Page, Inc. (C M)
WICHITA—Reid Supply Company (C P T)

KENTUCKY

LOUISVILLE—Dixie Solvents and Chemicals (C M P)
LOUISVILLE—Gans Chemical and Supply Company (P)
LOUISVILLE—McKesson and Robbins, Inc. (C M P T)

LOUISIANA

BATON ROUGE—Barada and Page, Inc. (C M)
LAKE CHARLES—Barada and Page, Inc. (C M)
NEW ORLEANS—Barada and Page, Inc. (C M)
NEW ORLEANS—Southern Solvents and Chemicals (C M P T)

MAINE

LEWISTON—Polar Chemical Company (C M P T)

MARYLAND

BALTIMORE—B. J. Howard Company (C M P T)
BALTIMORE—Leidy Chemicals Corporation (C M P)
BALTIMORE—Seiler Chemicals (C)
BALTIMORE—Tilley Chemical Company (T)

MASSACHUSETTS

BOSTON—Howe and French, Inc. (C M)
BOSTON—Linder and Company, Inc. (C M P T)
BOSTON—McKesson and Robbins, Inc. (C M P T)
EVERETT—Sessions-Gifford Co., Inc. (C M P T)
FRAMINGHAM—Axton-Cross Corp. of Massachusetts (C P T)
HINGHAM—Stephens & Roger, Inc. (C M P T)
HOLYOKE—Eastern Chemicals, Inc. (M)
SPRINGFIELD—Chemical Corporation (C M P T)
SPRINGFIELD—Hampden Color and Chemical Co. (C M P)
STONEHAM—Geo. Mann & Co. (C M P T)
WORCESTER—George H. Clark and Co. (C M P T)

MICHIGAN

DETROIT—Eaton Chemical and Dyestuff (C M)
DETROIT—McKesson and Robbins, Inc. (C M P T)
DETROIT—Western Solvents and Chemicals (C M P)
DETROIT—Whitfield Chemical Company (P)
EAST DETROIT—Sherwood Chemical Company (P)
ESCANABA—Haviland Products Company (C M P)
FERNDALE—Manpro Corporation (C M P T)
GRAND RAPIDS—P. B. Gast and Sons Company (C)
GRAND RAPIDS—Haviland Products Company (C M)
GRAND RAPIDS—Wolverine Solvents and Chemicals Co. (C M P)
LANSING—Carrier Stephens Company (C P)
LANSING—Wheaton Chemical Company (C P T)
LUDINGTON—P. B. Gast and Sons Company (C)

MINNESOTA

MINNEAPOLIS—W. H. Barber Company (P T)
MINNEAPOLIS—McKesson & Robbins, Inc. (C M P T)
MINNEAPOLIS—Tripoli Refining Corporation (M P T)
ST. PAUL—Lyons Chemicals, Inc. (C M P)

MISSISSIPPI

JACKSON—F. H. Ross and Company (C M P)

MISSOURI

KANSAS CITY—Barada and Page, Inc. (C M)
KANSAS CITY—Missouri Solvents and Chemicals (C M P)
KANSAS CITY—Sherwood and Company, Inc. (C M P T)

ST. LOUIS—Barada and Page, Inc. (C M)
ST. LOUIS—Independent Oil Company (C M P T)
ST. LOUIS—McKesson and Robbins, Inc. (C M P T)
ST. LOUIS—G. S. Robins and Company (C M P)
ST. LOUIS—St. Louis Solvents and Chemicals (C P T)
ST. LOUIS—Missouri Solvents and Chemicals (C M P)

NEBRASKA

OMAHA—Barton Solvents, Inc. (C M P T)
OMAHA—McKesson and Robbins, Inc. (C M P T)

NEW JERSEY

CAMDEN—Callahan Chemical Company (M P T)
EAST PATERSON—Aetna Color and Chemical Company (C M P T)
MURRAY HILL—American Mineral Spirits (C M P T)
NEWARK—American Oil and Supply (C P)
NEWARK—National Oil and Supply Company (C M P T)
PALISADE PARK—Philip A. Hunt Company (C)
VINELAND—Lirio Chemical Company (C T)

NEW MEXICO

ALBUQUERQUE—Braun Chemical Company (C M P T)
ALBUQUERQUE—Edmunds Chemical Company (C M P T)

NEW YORK

ALBANY—Eastern Chemical (C M P T)
ATHENS—Spick Products Company (P T)
BINGHAMTON—Collier Chem. (C M)
BRONX—Elco Solvents Corporation (M P T)
BROOKLYN—Enequist Chemical Company (C P)
BUFFALO—Buffalo Solvents and Chemicals (C M P T)
BUFFALO—Chemical Sales Corporation (C M P)
EDGEMERE—Hogan Industrial Supply (P T)
GLOVERSVILLE—Eastern Chemicals, S. H. Ireland Div. (C M)
LONG ISLAND CITY—Peerless Oil and Chemical (C M P T)
NEW YORK—American Chemicals, Inc. (C M P T)
NEW YORK—McKesson and Robbins, Inc. (C M P T)
POUGHKEEPSIE—Duso Chemical Company (C)
RENSSELAER—Eastern Chemicals, Inc. (C M)
ROCHESTER—Chemical Sales Corporation (C M P T)
ROCHESTER—J. H. Rae Oil Company, Inc. (P T)
SYRACUSE—Eastern Chemicals, Inc. (C M)
UTICA—Monarch Laboratories (C M P)

NORTH CAROLINA

CHARLOTTE—F. H. Ross and Company, Inc. (C M P T)
CHARLOTTE—Southern States Chemical Co. (C M P T)
GREENSBORO—F. H. Ross and Company, Inc. (C M P T)

OHIO

AKRON—Farley Solvents Company (C M P T)
AKRON—C. P. Hall Company (C P T)
CANTON—Bison Corporation (C P T)
CINCINNATI—Amsco Solvents and Chemicals (C M P)
CINCINNATI—Chipman Supply Company (T)
CINCINNATI—Herbert Chemical Company (P T)
CINCINNATI—McKesson and Robbins, Inc. (C M P T)
CLEVELAND—Man-Gill Chemical Company (C P T)
CLEVELAND—McKesson and Robbins, Inc. (C M P T)
CLEVELAND—National Solvents Corporation (C P T)
CLEVELAND—Ohio Solvents and Chemicals, Inc. (C M P)
CLEVELAND—R. W. Renton Company (C P T)
COLUMBUS—McKesson & Robbins Inc. (C M P T)
DAYTON—Industrial Chemical Products Co. (C P T)
DAYTON—Ottoson Solvents, Inc. (T)
LIMA—Thomson Chemical Company (C P T)
TOLEDO—Inland Chemical Co. (C M P T)
TOLEDO—Toledo Solvents and Chemicals (C M P)
TOLEDO—M. I. Wilcox Company (C P T)
YOUNGSTOWN—Rhiel Supply Company (C M P T)

OKLAHOMA

OKLAHOMA CITY—Barada and Page, Inc. (C M)
TULSA—Barada and Pag., Inc. (C M)
TULSA—Chemical Products, Inc. (C M P T)

OREGON

PORTLAND—Van Waters and Rogers (C M P)

PENNSYLVANIA

CONSHOHOCKEN—American Mineral Spirits (C M P T)
EASTON—Lehigh Valley Chemical Company (C M P T)
ERIE—Monarch Laboratories (C M P T)
McKEES ROCK—Apex Soap and Sanitary Corp. (C P T)
PHILADELPHIA—Alex C. Fergusson Company (C P T)
PHILADELPHIA—McKesson and Robbins, Inc. (C M P T)
PHILADELPHIA—Philips and Jacobs, Inc. (C M)
PHILADELPHIA—Pioneer Salt Company (C M P T)
PHILADELPHIA—George Senn, Inc. (C M P T)
PITTSBURGH—Carmac Chemical Company, Inc. (C P)
PITTSBURGH—Carman-Pittsburgh Company (C P T)
PITTSBURGH—Dacar Chemical Products Company (C P T)
PITTSBURGH—Ft. Pitt Chemical Company (C M P)
PITTSBURGH—McKesson and Robbins, Inc. (C M P T)
READING—R. W. Eaken, Inc. (C P T)
READING—Textile Chemical Company (C P)
SCRANTON—Scranton Chemical Company (C P T)
YORK—Industrial Solvents and Chemicals (C P T)

RHODE ISLAND

PROVIDENCE—George Mann and Company (C M P T)
PROVIDENCE—Sessions-Gifford Company, Inc. (C M P T)

SOUTH CAROLINA

CHARLESTON—Burris Chemical Company (C P T)
GREENVILLE—F. H. Ross & Co. (C M P T)
GREENVILLE—Southern States Chemical Company (C M P T)
SPARTANBURG—Moreland Chemical Company, Inc. (C M P T)

TENNESSEE

CHATTANOOGA—Chapman Chemical Co. (C M P T)
CHATTANOOGA—Wilson Sales Company (C M P T)
KINGSPORT—Chem-I-Dent, Inc. (C P T)
MEMPHIS—Chapman Chemical Company (C M P T)
MEMPHIS—C. P. Hall Company (C M P T)
MEMPHIS—Ideal Chemical and Supply Co. (C M P T)
NASHVILLE—Chapman Chemical Company (C M P T)
NASHVILLE—Wilson Sales Company (C M P T)

TEXAS

AMARILLO—State Chemical Company (C M P T)
AUSTIN—R. M. Hughes Company, Inc. (C M P T)
BEAUMONT—Arthur Dooley and Son (C M P T)
CORPUS CHRISTI—Barada and Page, Inc. (C M)
DALLAS—Barada and Page, Inc. (C M)
DALLAS—McKesson & Robbins Inc. (C M P T)
DALLAS—Texas Solvents and Chemicals Co. (C)
DALLAS—Van Waters and Rogers, Inc. (C M P T)
EL PASO—Baron Chemical Company (C M P T)
EL PASO—Braun Chemical Company (C M P T)
EL PASO—Mine and Smelter Supply Company (P)
FORT WORTH—Barada and Page, Inc. (C M)
FORT WORTH—Worth Chemical Products Co. (C M P)
HOUSTON—Barada and Page, Inc. (C M)
HOUSTON—W. H. Curtain and Company (P)
HOUSTON—Dixie Chemical Company (C M P T)
HOUSTON—R. M. Hughes Company, Inc. (C M P T)
HOUSTON—McKesson, Texas Chemical Division (C M P T)
HOUSTON—Texas Solvents and Chemicals Co. (C M P)
HOUSTON—Van Waters and Rogers, Inc. (C M P T)
LUBBOCK—State Chemical Company (C M P T)
MIDLAND—State Chemical Company (C M P T)
ODESSA—Barada and Page, Inc. (C M)
SAN ANTONIO—R. M. Hughes Company, Inc. (C M P T)
SAN ANTONIO—McKesson and Robbins, Inc. (C M P T)

UTAH

SALT LAKE CITY—Braun-Knecht-Heimann Co. (C M P)

VIRGINIA

NORFOLK—Taylor Salt and Chemical Company (C P T)
RICHMOND—Phipps and Bird, Inc. (C M P)
ROANOKE—Havnaer Supply Company (C M P T)

WASHINGTON

SEATTLE—Van Waters and Rogers, Inc. (C M P)
SPOKANE—Van Waters and Rogers, Inc. (C M P)

WEST VIRGINIA

CHARLESTON—B. Preiser and Company (C M P T)
FAIRMONT—Fairmont Machinery, Fairmont Supply (C P T)
HUNTINGTON—Cabell Chemical Company (C P T)

WISCONSIN

CHIPPEWA FALLS—Lyons Chemical (C M P T)
MADISON—North Central Chemicals (C M P T)
MILWAUKEE—McKesson and Robbins, Inc. (C M P T)
MILWAUKEE—Wisconsin Solvents and Chemicals (C M P)
WAUKESHA—Fred Portz and Son (C T)

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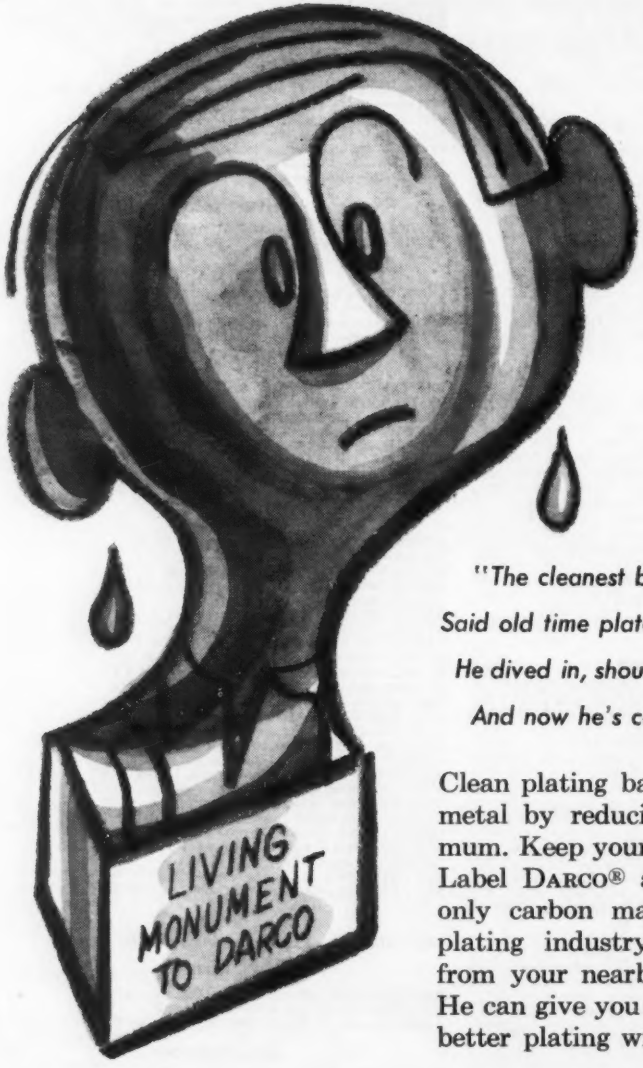

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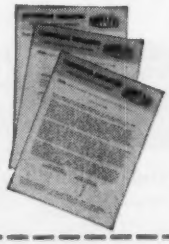
*

AK ETCHES, with *ease* and *efficiency!* This unique formulation works on all aluminum alloys and *prevents formation* of aluminum oxide scale by means of a special sequestering agent. No more scale means no more down-time for costly clean-up . . . less chance for coil and tank damage in maintenance . . . better temperature control . . . longer solution life, with lower product consumption . . . greater operational safety through the elimination of mid-shift dumping. Cowles AK gives a more uniform finish for plus results through easier inspection, quality improvement and increased end product sales appeal.

*

DO DE-SMUTS, *without hazard* to safety! Personnel problems connected with the handling dangers of liquid acids disappear overnight with *powdered acid* Cowles DO. Highly efficient, DO solutions de-oxidize the primary aluminum oxide film rapidly, then re-oxidize the metal surface slowly and uniformly with an air-stable oxide film and no residue of smut. Surfaces are super-clean for spot-welding, anodizing or chromate finishing. Recommended cleaning concentrations and solution temperatures are low—total solid content remains low . . . rapid drying-on is inhibited . . . residual film is minimized . . . rinsing is facilitated.



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editorial

Finishing Terminology: Clarification Needed

The terms used to describe processes in the finishing industry can lead to misinterpretation. All of us who have been in the industry for a long time have always understood that the term "gold plating" means the deposition of gold on a metallic surface. Similar expressions are used to describe nickel plating, silver plating, and so on.

Methods have been devised to deposit metals on less familiar base metals or to plate on base metals previously thought difficult or impossible to plate. Processes for plating on aluminum, magnesium, and titanium often have been described as "aluminum plating," "magnesium plating" and "titanium plating." This is inconsistent and incorrect terminology.

A reader has called our attention to the article in the February issue of PRODUCTS FINISHING entitled "A Missile-Maker's Titanium Plating Process." He points out that we do not mean a process for depositing titanium, but rather a process for depositing other metals *on* titanium. The title of the article should have made this clear.

Other examples of confusing terminology can be found. There are at least two processes called "flame plating." One is a process for securing a plastic coating; one is a process for depositing a hard, wear-resisting surface on hard metals. In each case the flame is not "deposited" but the flame is the agent in the process.

Another example can be cited in the case of "gas plating" or "vapor plating." Again, the gas is not plated, but the deposit is obtained from the vapor phase or vapor state. The same is true of "vacuum plating."

Our reader suggests a crusade in support of the use of terms which will describe finishing processes accurately, leaving no doubt as to the operation under consideration. We hasten to join him in his crusade.

Ezra A. Blount

—EDITOR

Let's Examine . . .

Water-Dispersed Paints for Product Finishing

By M. C. CARPENTER

Coatings Technical Service
The Dow Chemical Company

Latex paints similar to those that rose from an unknown in 1947 to a 50-million-gallon-per-year architectural finish by 1955 are now entering the industrial product finishing field. The development of latexes suitable for use in paints that are applied on metal products makes these finishes contenders for a share of the huge industrial finishing market — currently about 40 per cent of total paint sales.

Some auto makers—Lincoln, for one — have already adopted the water-dispersed coatings as standard for prime coat. And experimental cars with both primer and topcoat are being driven on the streets of several cities today, unnoticed. Many other big users are evaluating these coatings to see if they can be used on their products.

Advantages

The reasons for the interest in water-dispersed coatings are obvious. Like the many do-it-yourself fans who have enthusiastically accepted water paints, industrial applicators like the idea of cleaning equipment, floors and hands with water. It means not only an easier way to clean; for the big user, it also means a worthwhile saving in cost of cleanup solvents. Savings in cost of thinners used for viscosity adjustment are important, too.

The plant safety manager likes the idea. A big fire hazard is eliminated when flammable solvents are not used. Insurance rates for such plants would surely be reduced. And the whole problem of odor-fumes-smog-makeup air would certainly be a lot easier if the volatile solvent used in today's paint were ordinary water.

What Is Latex Paint?

Latex paints are quite different from the paints and lacquers now in general industrial use. The most obvious difference is that water, not organic solvents, is used in these film formers. But perhaps just as important a difference is the fact that the "latex" that is the heart of this system is *dispersed* in the liquid rather than being *dissolved* in the liquid as are the resins in solvent systems.

Are these paints the same as conventional paints except for the solvent? How about resistance to alkali, salt spray, water, impact? Where are they being used now? How do application procedures differ? Here are the answers . . .

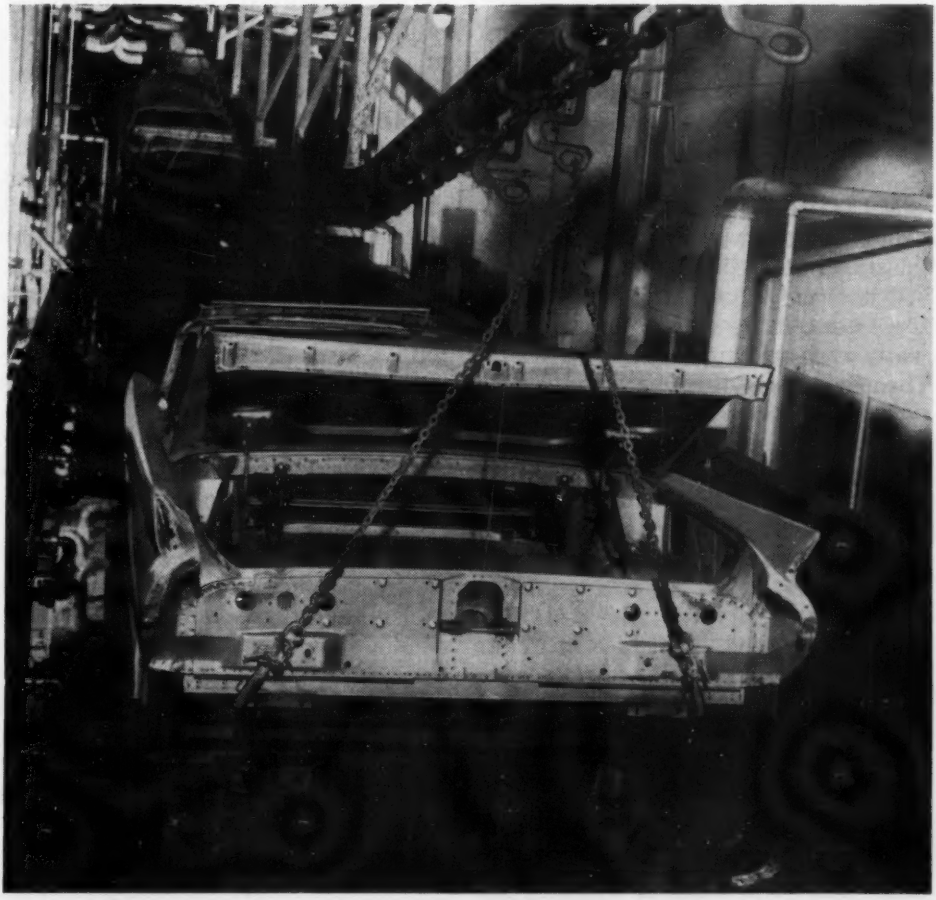


Fig. 1—Lincoln automobile body entering 10,000-gallon tank of Glidden latex primer.

"Several problems had to be overcome in order to introduce an industrial latex paint."

The tiny particles (a fraction of a micron in size) that make up the binder or film former in latex paints are composed of thousands of long-chain molecules known as polymers and copolymers. These particles are finely ground and dispersed in water. The dispersion is then applied to the surface being finished.

As the water dries out of a wet latex paint film, the particles are crowded closer and closer together. Tremendous surface-tension forces break down particle identity into a homogeneous film. Pigment particles that supply the color are bound by the latex and occluded within the film.

Several problems had to be overcome in order to introduce an industrial latex paint. These paints are not just slight modifications of the latex paints commonly used on walls and masonry.

The first problem was to find a polymer or copolymer that would produce the properties required of an industrial paint. Dow Chemical Company introduced the first latex recommended for use in formulating industrial paints.*

The Dow material is a styrene-butadiene copolymer—the result of screening thousands of latexes made with many different polymers and copolymers. Styrene is a hard monomer. Butadiene is soft and tacky. By combining the two in a single copolymer, a latex with a combination of the often-contradictory properties needed—hardness, adhesion, flexibility, and so on—is obtained.

Another problem that had to be overcome before latex could be used on metal was catalysis of the film-forming material by iron ions of the substrate or by metal additives. Iron ions convert the normally thermoplastic material into one that is more nearly thermosetting. Researchers solved this problem by building into the latex an acceptance of catalysis.

Comparison of Properties: Water Paints and Solvent Paints

One basic difference between solvent and latex systems is that molecular weight of the latex and viscosity of the paint are practically unrelated in latex systems, while in solvent systems higher-molecular-weight resins result in paints that are more viscous. Result: resins with too high a molecular weight cannot be used in solvent systems because the resulting paint is too viscous to be applied by normal means; but with latex paints high-molecular-weight polymers and copolymers can be used without difficulty — in fact high-molecular-weight materials can be used to make paints that are water thin.

Since many important properties are enhanced by high-molecular-weight film formers, this is an important advantage for the latex paint.

When greater viscosity is desirable, thickeners are added to the latex paints.

Film properties of latex paints—

*Dow produces latex for industrial finishes. Other paint-industry suppliers are working with and producing other materials for use in water dispersions.

Table I

PERFORMANCE OF DOW LATEX 566 PAINTS COMPARED WITH COMMERCIAL SYSTEMS

Tests	Time	Dow Latex 566 Primer	Commercial Epoxy Primer
5 per cent Salt Spray	320 hours		
Creep		1/8 inch	1/4 inch
Rusting		None	None
100 deg. F. Water Immersion	240 hours		
Adhesion		Good	Very Good
Blistering		None*	None
			Commercial Alkyd Primer
Florida Exposure 45 degrees South	1 year		
Creep		None	None
Rusting		None	None
Adhesion		Very Good	Fair

*slight fine wrinkling

adhesion, salt-spray resistance, impact resistance, hardness and so on —can be modified by addition of certain resins. Some of the resins which have been used to modify latex paints include alkyd resin emulsions, hydrocarbon resin emulsions and water-soluble resins.

Many of the film properties of the latex paints are comparable to those obtained from conventional paints. This has been shown in tests performed on primers, which were among the first products of the latex type that were introduced for industrial use.

Property profiles of primers made with latex compared to conventional primer systems are shown in Table I. In these tests, the primers were applied to phosphatized steel panels. These panels were baked and then topcoated with a commercial high-melamine alkyd enamel. The latex is seen to be comparable in several important properties to the conventional baked enamels.

Typical latex primer formulations have also been compared with commercial acrylic lacquer primers, both types applied under commercial acrylic lacquer topcoats. In each instance, the primers were applied to phosphatized steel panels, baked at recommended schedules, sanded, and then topcoated.

Evaluations were made in 100-per-cent-relative-humidity condensation tests and then in 5-per-cent-salt spray tests. The latex primers are equal to or better than the commercial controls in hardness, adhesion, and creep resistance.

In addition to these properties, latex systems also have good resistance to many chemicals, including alkalies, formaldehyde, bromine, linseed oil, motor oil, 20 per cent hydrochloric acid, sea water, 49 per cent sulfuric acid, phosphoric acid and other chemicals.

Application Properties

When the product finisher compares latex and solvent systems, he

"Minimal flow can be an advantage in dipping applications . . ."

will note certain differences in application properties. Latex paints usually have less flow than solvent paints; however, paint manufacturers can formulate latex paints to reflect a range of desirable flow properties to meet specific end use requirements. Minimal flow can be an advantage in dipping applications, where it may mean more uniform film thickness from top to bottom of the dipped part. Incidentally, latex paints can be satisfactorily sprayed as well as used in dip tanks, suiting them for both the major industrial paint application methods.

Foam is a recurrent problem with latex paints — but is satisfactorily controlled through the use of antifoamer, by careful application techniques, and by design of equipment to minimize splashing and unnecessary foam build-up.

Latex paints also differ from solvent-thinned paints in baking-schedule characteristics. If thick films of latex paints are exposed to high heat, the water may boil out of the film and cause blistering. Therefore, in the baking of a wet latex paint, either lower initial temperatures or longer preheat times, or both, may be necessary to avoid blistering. Humidity control in the baking environment can help bring about the same measure of protection.

The non-flammability properties of a latex paint can lead to another interesting advantage when thin films of the paint are spray applied. In certain applications where the metal has been flame degreased or has just come from an annealing oven, latex paint may be sprayed directly onto the hot metal. The paint cools the metal and the heat in the metal bakes and cures the paint film. Such a practice would be dangerous and would demand costly safeguards if attempted with solvent-thinned finishes.

Typical Uses

As mentioned previously, one of the pioneer uses for latex industrial paints has been as a primer. In this application the water-dispersed coating has shown that it will meet film-performance requirements and that successful production application is possible. The Glidden latex paint used in the 10,000-gallon dip tank at Lincoln (Fig. 1) had to meet the following specifications:

1. Excellent dip-tank stability.
2. Adhesion to oily metal surfaces.
3. Minimal foaming in dip tank (the surface of the dipped material must be free of bubbles).
4. Minimum of 250 hours 5-percent-salt-spray resistance after baking.
5. Minimum 250 hours water immersion after baking.

This dip tank has been in operation for a year now, with no major problems.

Latex paints have excellent alkali-resistance properties, which are being exploited as linings for tank cars (Fig. 2).

The latex coating is sprayed over sand blasted steel tank car interiors. Each application is dried one to

three hours with forced air at 130 to 160 deg. F. In this highly corrosive service, a minimum of six coats is used, with a final airing at 190 deg. F. for about 36 hours.

At least three large chemical companies have used this latex system in their tank cars. At one concern, 45 out of 46 cars are in "excellent" condition after 50-75 trips with 50 to 73 per cent caustic. The other car is rated "good." The average age of these cars at present is two years, and most of them show no indication of film failure.

Other commercial uses for latex paints presently range from automotive small parts to bed springs! The paints provide continuous, tough, durable films which more than adequately protect the coated pieces from corrosion.

Other areas in which latex primer paints may be used in the future include metal furniture; electrical equipment; household appliances; motors; drums; auto interiors.

Future of Industrial Latex

Latex finishes have a future as a production finish. New and improved formulations must be developed to accommodate the range of extremes found in industrial painting.

In some instances layout of plants must be changed to make best use of latex advantages. Finishers must be oriented in the proper use of latex paints. Within the next few years, the latex producer, the paint manufacturer, and the product finisher will fulfill these goals.

Industrial latex finishes are in their infancy, but because of their advantages and their properties they have a utility which assures their steady growth.

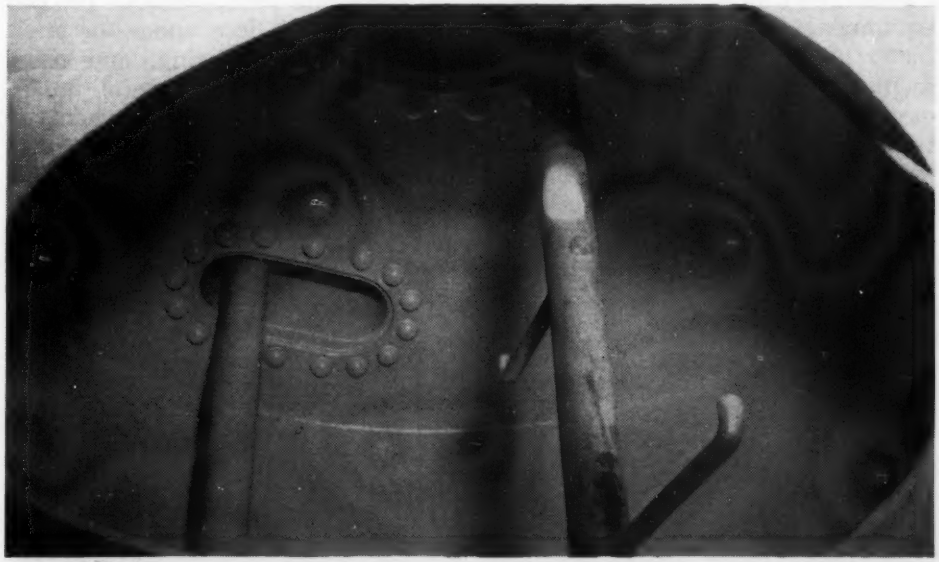


Fig. 2—Interior of tank car lined with latex paint. Multiple-coat finish has withstood effects of hot, concentrated caustic for more than two years and it remains in good condition. (Photographs courtesy of The Dow Chemical Company, Midland, Michigan.)

Specialized Finishes and Finishing Processes for Aircraft Instruments

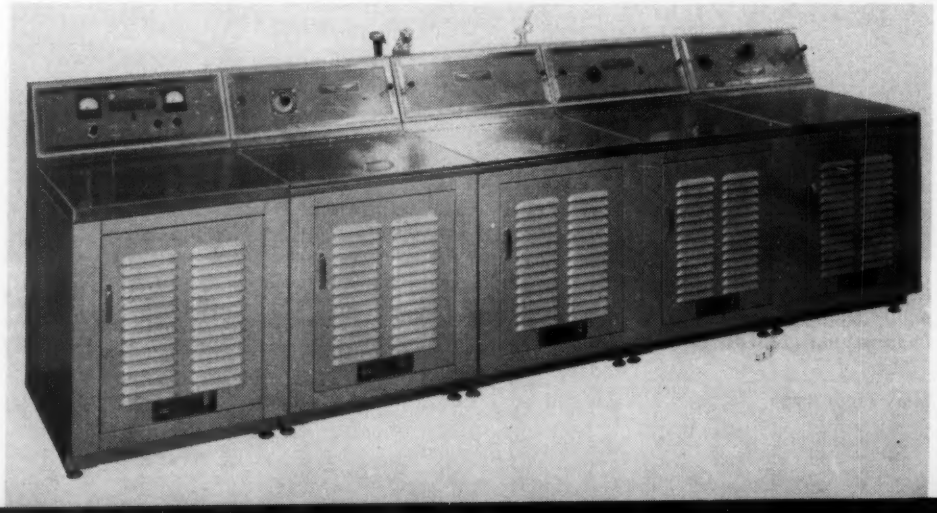
By EZRA A. BLOUNT,
Editor

Products manufactured at Pioneer-Central Division of Bendix Aviation Corporation, Davenport, Iowa, can be classified as precision equipment. This fact underlies the selection of methods employed in manufacture and finishing of the products.

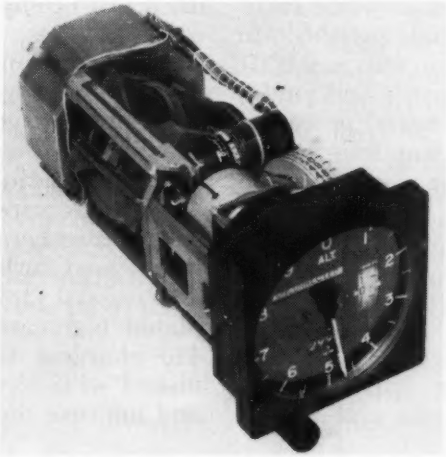
Products include equipment for the aircraft industry, such as oxygen equipment and systems, fuel flowmeter equipment and flight instruments. Oxygen regulators, liquid oxygen converter systems, fuel-flow transmitters, fuel-flow rate indicators, and fuel-flow totalizing indicators, turn and bank indicators, machmeters, airspeed indicators, and accelerometers are among the major products which add up to over 100 different types and models. Complete ultrasonic cleaning units (Fig. 1), which are being used increasingly throughout industry, are also produced at Pioneer-Central.

The Pioneer-Central plant (Fig. 2), erected in 1948, contains 190,000 square feet of floor space for engineering, manufacturing, and office facilities. There are several finishing departments and a chemical and metallurgical laboratory that has facilities for visual and physical inspection of all incoming material.

Fig. 1—This ultrasonic cleaning system is made by Bendix's Pioneer-Central Division.

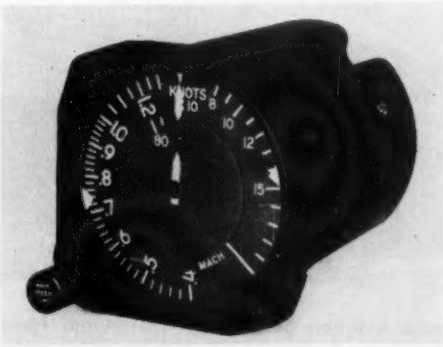


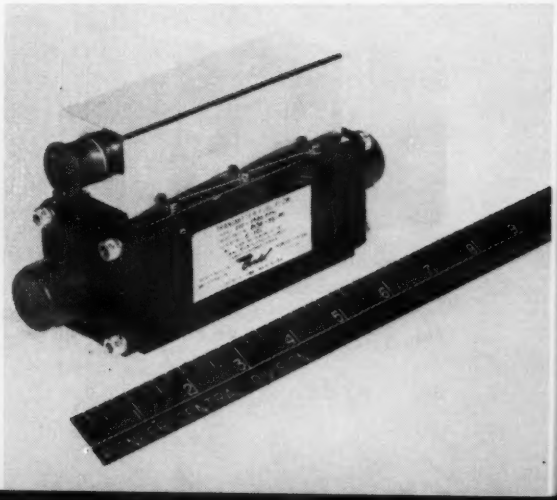
Parts for the aircraft instruments and other products manufactured at Pioneer-Central are fabricated to close tolerances, then finished by barrel finishing, electroplating, anodizing, and painting. Processes are specialized, yet must be set up on a production basis...



Among the aircraft instruments made by the Pioneer-Central Division of Bendix Aviation Corporation are the compensated altimeter (right) and airspeed and mach-number indicator shown below.

Liquid oxygen converter (above) and fuel-flow transmitter (below) are additional examples of instruments made in Davenport plant. (These photographs courtesy Bendix Aviation Corporation.)





"Tiny pivots and guides for instruments are barrel processed to produce the friction-free mating surfaces . . ."

The lab is also responsible for chemical control of the many finishing processes, inspection of parts in process, and final inspection of finished products.

Barrel Finishing

Aluminum, magnesium, copper, brass, beryllium copper, steel and stainless steel are used to manufacture the precision products of Pioneer-Central.

After metals have been inspected, parts are formed by machining or other processes, and in some cases hand burnished and polished to tolerances of plus or minus 0.0001 inch or less. Tiny pivots and guides for instruments are barrel processed to produce the friction-free mating surfaces required for aircraft instrument parts.

Small parts are vapor degreased and barrel finished or deburred in small, multiple-barrel tumbling machines (Fig. 3), consisting of wood frames with glass jars that serve as deburring barrels. Each bench has ten barrels and all ten are driven by one drive motor. Ten different kinds of parts can be processed at one time.

Larger parts are deburred and barrel finished in another barrel finishing installation near the "micro-deburring" setup. The larger barrel finishing department, shown in Fig. 4, employs a Blakeslee vapor degreaser, two Pangborn Hydro-Finish wet blasting units, a Grav-I-Flo fixture-type barrel finishing machine, several Almco rubber-lined, two-compartment barrels of different sizes, a three-barrel submerged tumbling machine (Fig. 5), fitted with 16-by-30 inch barrels, a centrifugal dryer, a rotary dryer utilizing corn cob meal or sawdust, and a circulating hot-air dryer.

Parts are vapor degreased if necessary, then barrel finished to secure the desired surface finish, size, and dimensional tolerance. Chromium plated high-carbon steel parts and 410 stainless steel parts are burnished with steel balls to brighten and improve the finish, remove any

Fig. 2—Main plant of Pioneer-Central Div., Bendix Aviation Corporation, Davenport, Iowa.

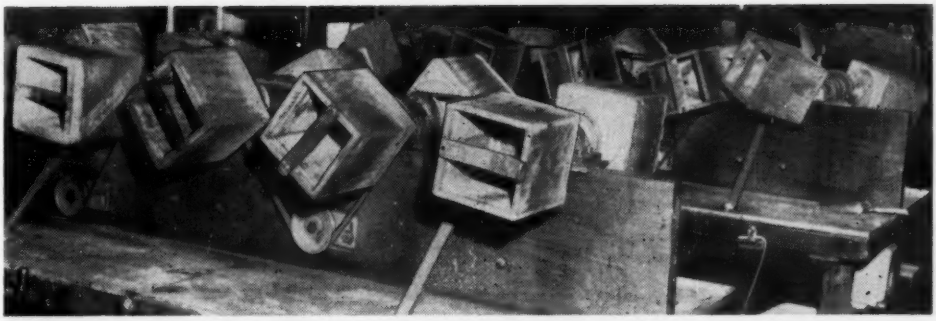


Fig. 3—Bench-mounted tumbling units for deburring small parts. Ten wood barrel frames are run from a single motor by a multiple drive. Glass jars containing the parts and the burnishing media are mounted in the wooden frames. Frames rotate on their horizontal axes or at an angle, to secure various tumbling and burnishing effects. These precision parts are separated in hand screens after tumbling cycle has been completed.

white spots or areas on the plated surface.

Generally, parts are barrel finished to remove burrs and produce a smooth surface prior to further processing or final assembly. Vapor (wet) blasting removes heat-treat scale or soldering stains. Sand blasting produces a matte surface on certain aluminum parts and part areas prior to anodizing.

Electrodeburring, Electropolishing

Certain parts may be processed more advantageously by electropolishing and electrodeburring. These operations are performed in the installation shown in Fig. 6. Aluminum, brass and stainless steel parts are electropolished in this setup. Parts are inspected, certain areas are masked off (if necessary) with Miccrosol stop-off, and electropolished or electrodeburred by means of the following process cycle:

1. Vapor degrease.
2. Rack.
3. Immerse in a mild alkaline cleaner held at 140 deg. F.
4. Spray rinse with cold water (Foot-treadle-operated spray rinse).
5. Rinse in hot water.
6. Electropolish in Battelle electropolishing solution for ½ to 1 minute. The temperature is held at a predetermined value between 150 and 180 deg. F. The steel tank has a pure lead lining. Pure lead cathodes are used.
7. Spray rinse with cold water in a lead-lined tank.
8. Rinse in cold bubbling water (air agitated). This rinse is equipped with a Solubridge automatic rinse control, which automatically valves fresh water into the tank when the acid concentration exceeds a preset level.
9. Rinse in hot, air-agitated water.
10. Dry in air blast.

Stainless steel parts are electropolished at a higher temperature (170 to 195 deg. F.) and a current

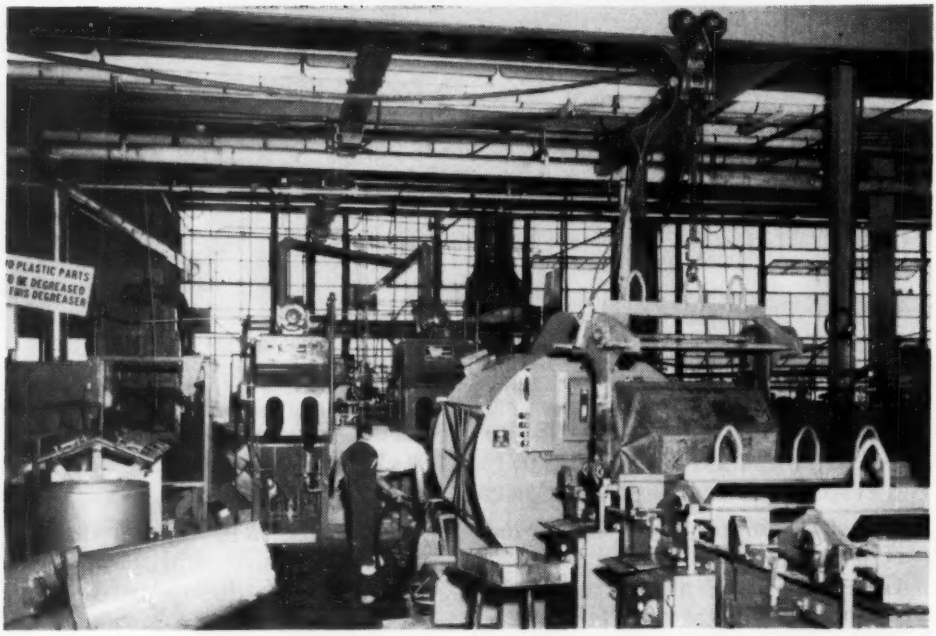


Fig. 4—Barrel finishing department for processing larger parts. Equipment includes a centrifugal dryer and rotary dryer (left foreground), vapor degreaser (left background), two wet blasting units (center background), three-barrel submerged burnishing setup (right foreground), and large fixture-type barrel finishing machine (center background).

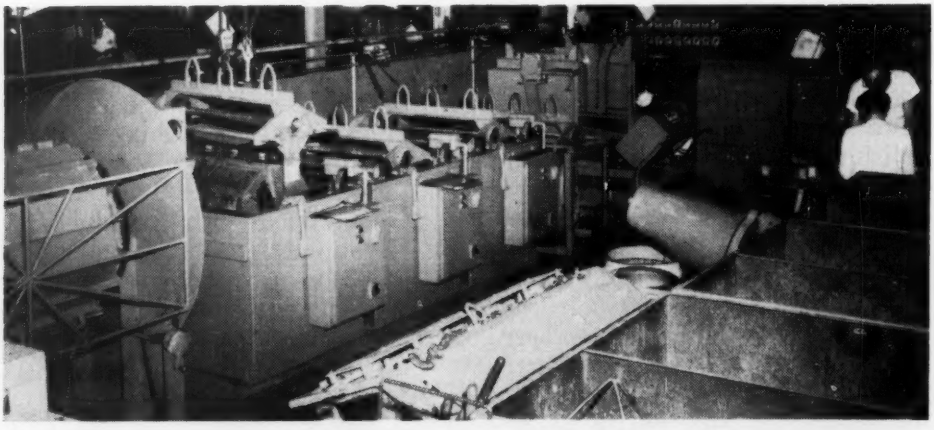


Fig. 5—Another view of the barrel finishing department shows the submerged burnishing setup, unloading station (center background), and (in right background) several 16-by-30 inch two-compartment tumbling barrels. Barrels are transported from tank to tank by an overhead crane and electric hoist identical to crane-hoist unit shown in Fig. 4.

density of two a.s.f. for five to 10 minutes or until the desired appearance is obtained. Conforming lead cathodes are employed in electropolishing the more difficult shapes.

Plating and Anodizing

So many plating, chemical treating, anodizing, and other operations are carried out in the Pioneer-Central plating department that it is much like a commercial job shop. The plating supervisors never know what operation they will be called on to accomplish.

The plating department has facilities for sulfuric acid anodizing, chromic acid anodizing, copper plating, nickel plating, dyeing anodized parts, impregnating porous castings, chemical conversion coating (including Iridite 14-2 and Iridite Mag-Cote), chromium plating, tin plating, tin-nickel plating, nickel plating, lead plating, tin-lead plating, cadmium plating, black nickel plating and the required auxiliary processes.

Anodizing aluminum parts is a major operation (Fig. 7). Racks for anodizing are made of aluminum, but have titanium tips. Rack bodies or splines are insulated and protected with Miccrosol 1002 plastisol rack coating. Parts to be anodized are vapor degreased (if required) racked, and processed as follows:

1. Clean for one to three minutes in hot alkaline, non-etching immersion cleaner.
2. Rinse in cold water.
3. Dip in a 10 to 20 per cent solution of nitric acid.
4. Rinse in cold water.
5. Dip in hydrofluoric acid, if required. Dip in alkaline

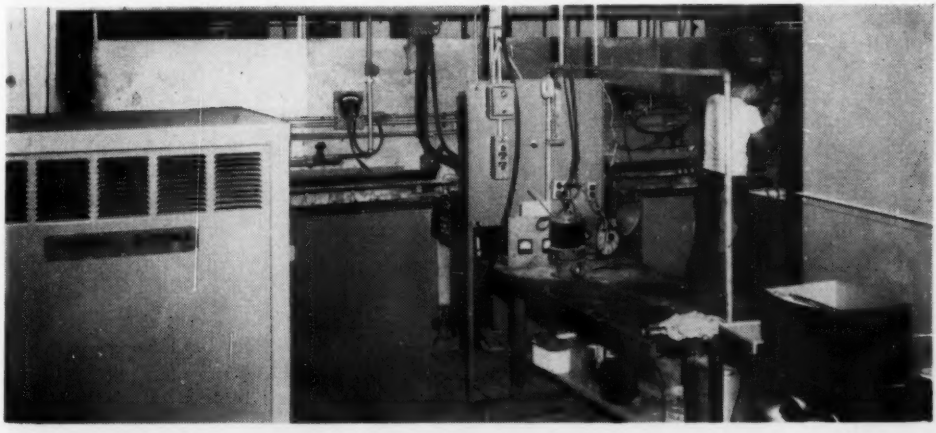


Fig. 6—Department for electrolytic deburring or electropolishing consists of two electropolishing solution tanks (background), auxiliary solutions and processing tanks. General Electric 15-volt rectifier shown in left foreground furnishes current of 1500 amperes. Sarco controls regulate temperatures of the solutions used for electropolishing.

"Magnesium parts are treated with Iridite Mag-Cote surface conversion coating."

etching solution, if specified.

6. Rinse in cold water (if operations listed in Step 5 have been employed).
7. Anodize in 15 per cent sulfuric acid for 30 to 50 minutes. Solution is held at 70 deg. F. by Sarco temperature regulator connected to both heating and cooling coils. Voltage: 24 volts. Current density: 50 a.s.f.
8. Rinse in cold water.
9. Seal in a dichromate solution for 15 minutes. Temperature, 180 deg. F.

Parts which are to be dyed black after anodizing are treated as above except for Step 9, and then treated as follows:

9. Dip in a solution of Sandoz black dye (1 oz./gal.) for 10 minutes. pH of this solution is held between 5.0 and 8.0 by additions of acetic acid.
10. Rinse in cold water.
11. Seal for three to five minutes in a solution of nickel acetate held at 180 deg. F.
12. Dry.

Parts to be chromic acid anodized are processed through Step 6 (above) and then treated as shown in the following outline:

Fig. 7—Anodizing area at Pioneer-Central. The anodizing racks are plastisol-coated aluminum with titanium tips. Note washer unit mounted on exhaust stack in center background.

7. Anodize in a solution of 10 per cent chromic acid for one hour. Temperature: 100 deg. F. Voltage: 40 volts.
8. Rinse in cold water.
9. Seal in hot water (180 deg. F.) for 10 minutes.
10. Dry.

Aluminum coils for use in oxygen systems are cleaned thoroughly inside and out and treated with Iridite 14-2. The coils are rinsed thoroughly on the inside with hot water.

Chromium plating to improve wear resistance, surface-finish characteristics, or to lower friction is applied to plain steel, stainless steel, high-carbon steel, corrosion-resistant alloy steel, phosphor bronze, and brass parts.

A conventional chromium plating solution containing 33 oz./gal. chromic acid with a sulfate ratio of 100 to 1 is used. A temperature of 120 to 130 deg. F. is maintained. The tank is divided electrically: two circuits and two control panels are employed. Special conforming anodes are used.

Parts mounted on specially-designed racks are cleaned in Oakite 90, rinsed, dipped in mild hydrochloric acid, rinsed, placed in the chromium plating tank, reverse-current etched, and then chromium plated. Low-carbon steel parts are cleaned anodically in the Oakite 90; high-carbon steel parts are cleaned cathodically.

Magnesium parts are treated with Iridite Mag-Cote surface conversion coating. Wrought aluminum parts

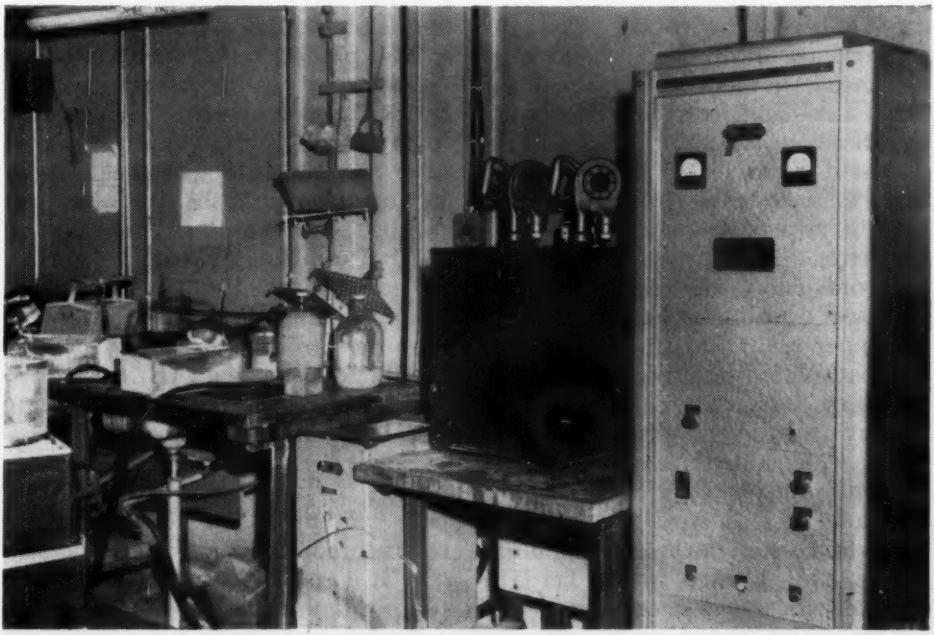


Fig. 8—Small parts are cleaned in this Pioneer-Central ultrasonic cleaning unit, then plated or treated chemically in small wire baskets shown at left of photograph.

". . . if the base metal has a hardness of Rockwell C 28 or more, it is stress relieved after plating . . ."

are treated with Iridite 14-2.

Copper is plated on certain areas of some stainless steel parts. Plastisol masks keep the copper plate off areas where no plating is desired.

Bright silver (H-VW-M Silver-Lume) is plated on brass and phosphor bronze parts, and on printed circuits.

Aluminum parts to be plated receive a zincate dip, then are plated in a Rochelle copper plating solution. When silver is applied as a second coat to aluminum parts, it is plated dull from a standard silver solution, without brighteners.

Certain aluminum parts are given the zincate treatment, Rochelle copper plated, and then plated with tin, tin-nickel or nickel. The tin plated parts are further treated with a dichromate-metastannic acid conversion coating in accordance with specification MIL-171. This coating makes it possible to solder the tin surface, even after an appreciable time in storage. Parts are tin plated in a barrel, then processed through the conversion treatment in stainless steel dipping baskets.

Copper-plated aluminum parts are lead plated or tin-lead plated in Harshaw fluoborate lead or tin-lead plating solutions. The tin-nickel alloy is deposited from a Metal & Thermit tin-nickel alloy plating solution.

Certain steel parts are cadmium plated and treated with Iridite chromate conversion coating.

Chromium plated parts and cadmium plated parts are baked in an oven after plating to eliminate hydrogen embrittlement. The general rule about baking is that if the base metal has a hardness of Rockwell C 28 or more, it is stress relieved after plating by baking from two to five hours at 300 to 375 deg. F.

Nickel plating is done in a solution of Udylite 30 bright nickel, which produces a deposit that will accept solder.

It is desired to have a black nickel deposit of low reflectivity on the inside of certain instruments. Black nickel, deposited from a nickel solution containing zinc and potassium thiocyanate, single and double nickel salts, is usually applied to brass, phosphor bronze, and beryllium copper parts.

The plating department also has facilities for sealing porous castings by the Imprex system. This process involves the alternate use of a vacuum and pressure with heat to inject a silicate into the castings.

Surface preparation facilities in the plating department are varied. In addition to the usual alkaline cleaning tanks there is an ultrasonic cleaning unit (Fig. 8), in which small precision parts are cleaned with an aqueous solution containing synthetic detergents.

Power for plating processes is furnished by an eight-volt, 4000-ampere rectifier. This rectifier and rectifiers for the anodizing processes are in a room separated from the plating department.

Fume exhausts in the plating department are of down-draft design and are routed under the floor. The

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UNRETOUCHED PHOTO of wrench plated with H-VW-M Nickel-Lume and chrome. Lower half was stripped with new NI-PLEX. Note clean, clear surface of basis metal—no pitting, no rough spots, no rounded corners!

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exhausts are then routed up through the plant roof. Water spray sections in the exhausts remove chemicals from the exhaust air and retain them in the drains.

Painting Department

Paint finishes of various kinds are applied to instrument and oxygen system parts, usually after prior chemical treatment or plating. Painters work in a compact painting department (Fig. 9) separated from the remainder of the factory and kept under slight pressure with filtered air. Operators in a series of water-wash spray booths spray the specified finishes from cup guns. Parts then air dry or are baked in batch-type ovens opposite the spray booths.

Among the finishes applied are zinc chromate primer, wash primer or etch primer (sprayed on aluminum or magnesium parts or on tin-nickel-plated surfaces), both dull and gloss black enamels. A black epoxy, for example, is applied to Iridited aluminum coils for an oxygen converter. Generally, the paint finishes applied are MIL specification finishes.

★ ★ ★

76,000,000 Nickels

Over 76,000,000 five-cent coins are produced each year at the United States Mint in Denver, Colorado. Although the U. S. "nickel" contains only 25 per cent nickel—the balance being copper—it takes almost 500,000 pounds of nickel to make these coins.

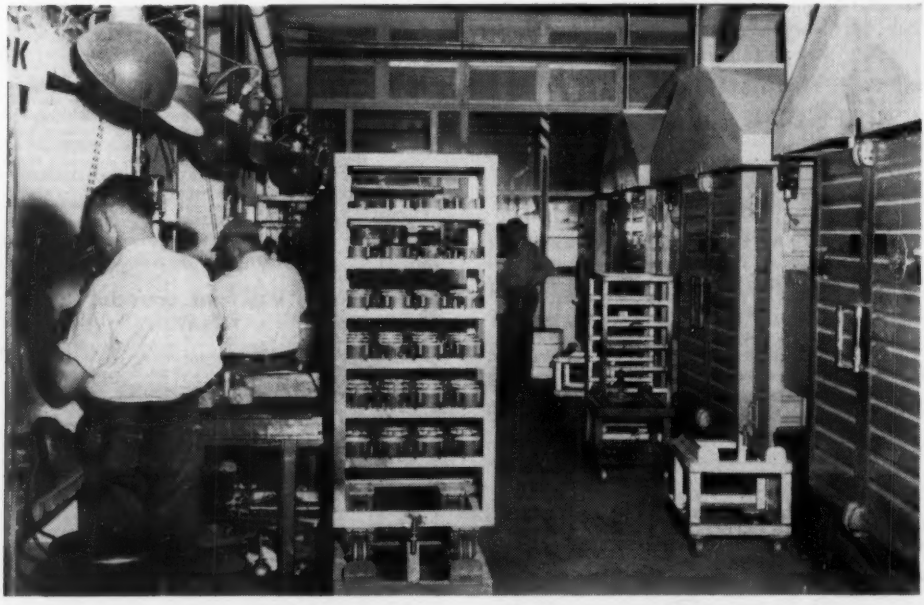
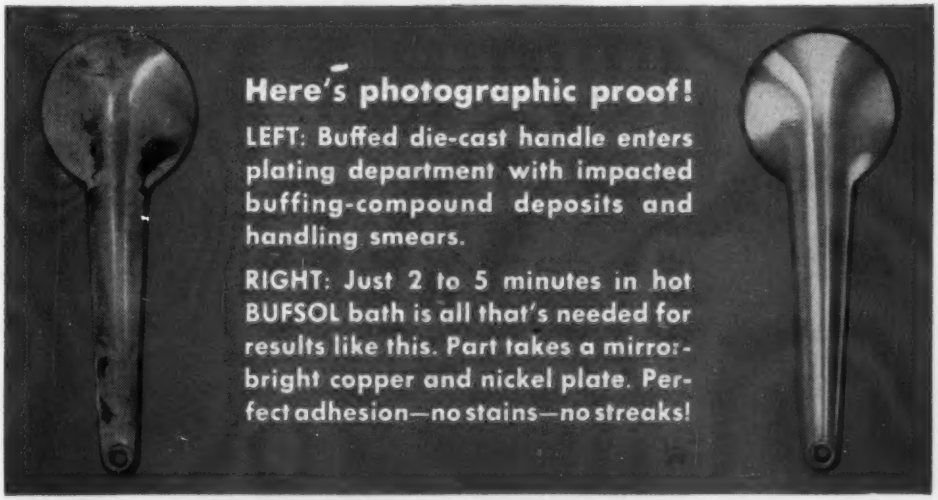


Fig. 9—Instrument bodies and other parts to be painted are inspected, cleaned, and racked on shelves of roller racks. Spray operators using cup guns apply specified paint finishes to the parts. Parts then air dry on the racks, or racks are pushed into batch-type ovens shown at right of the photograph for baking. Note automatic temperature regulator mounted on each of the baking ovens. (Photographs by PRODUCTS FINISHING)

New Wyandotte BUFSOL

REMOVES STUBBORN BUFFING COMPOUNDS WITHOUT SOLVENTS


Here's photographic proof!
LEFT: Buffed die-cast handle enters plating department with impacted buffing-compound deposits and handling smears.
RIGHT: Just 2 to 5 minutes in hot BUFSOL bath is all that's needed for results like this. Part takes a mirror-bright copper and nickel plate. Perfect adhesion—no stains—no streaks!

. . . adaptable to every plating cycle

New BUFSOL is fast, safe effective . . . the perfect solution to your plating department's No. 1 headache — buffing-compound removal. Check these performance features:

Highly effective: BUFSOL assures bright, stain-free, adherent electrodeposits — removes most buffing compounds, tripoli, and rouges—rapidly removes water-dispersible-type compounds.

Concentrated: BUFSOL solutions have long life even when loaded with buffing compound. BUFSOL is completely miscible in water, is used as a dilute solution.

No plating bath contamination: BUFSOL, a liquid detergent concentrate, rinses easily from recesses and damaged rack coatings. Can't interfere with electrocleaner performance!

Safe on metals: BUFSOL will not etch, darken, or attack zinc-base die castings, copper, brass, steel, or aluminum when used at recommended concentrations and temperatures.

Essentially odorless: BUFSOL produces no obnoxious fumes or odors, requires no special ventilation.

For full information on new BUFSOL, and other Wyandotte metal-cleaning products, call in a skilled Wyandotte representative today! *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California. Offices in principal cities.*

Wyandotte CHEMICALS

J. B. FORD DIVISION

THE BEST IN CHEMICAL PRODUCTS FOR METAL FINISHING

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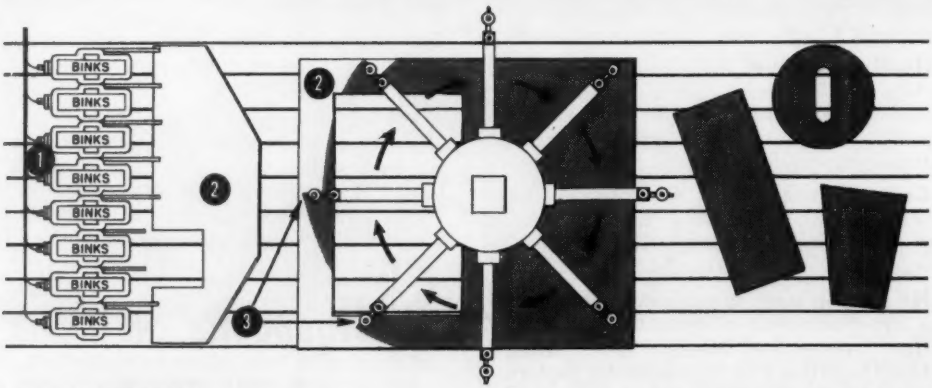
Installations employing Binks MEMORY TIMERS have been in operation for several years. (Ask for list.) However, no single photograph portrays the relationship of the timers, products and spray guns as well as the demonstration unit shown here.



Here is how the system looks from above

1. Binks MEMORY TIMERS astride your conveyor sense size, outline and location of . . .
2. irregularly-shaped products to be sprayed and relay this information to . . .
3. your automatically operated spray guns.

Now you can automatically SPRAY non-repetitive, odd shapes without wasting material...

Binks MEMORY TIMERS automatically sense product shape, size and location on the conveyor and relay this information to your automatic spray guns. The spray guns operate only when each product is in precise position. No material is wasted spraying cutout areas or irregular configurations. Coverage uniformity is improved.

These electro-mechanical timers are rugged and dependable. Best of all, they are adaptable to most rotary, horizontal or vertical spraying machines.

Send for Bulletin A96-1 . . . See how this new timer completely automates your finishing operation without involving you in complex equipment. Call your nearest Binks Branch Office or write direct.

Ask about our spray painting school
Open to all...NO TUITION...covers all phases.

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SPRAY PAINTING

SPRAY GUNS

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ALL-PURPOSE "CYANOBRIK" is shipped in full-open-head drums and is made in the form of 1-ounce pillow-shaped briquettes, convenient for measuring small quantities. Dusting is minimized, and accidental spillage can be cleaned up quickly and safely. It can be used in all sodium cyanide applications...including case hardening.

This is all-purpose "Cyanobrik" sodium cyanide

Du Pont announces...

All-purpose Cyanobrik® —two convenient forms

All-purpose "Cyanobrik" in briquette form can be used in all sodium cyanide applications—including case hardening

JUST A TWIST OF A WRENCH unlocks the full-open-head drums used to ship all-purpose "Cyanobrik" and new "Cyanogran" M. Drums can be easily reclosed to provide full protection for unused contents.

Now you can use all-purpose "Cyanobrik" efficiently in *all* known applications for sodium cyanide, including plating, case hardening and chemical manufacture. The reason—a new manufacturing process at Du Pont's modern Memphis, Tenn., plant has succeeded in making "Cyanobrik" lower in moisture content and more resistant to moisture than ever before.

All-purpose "Cyanobrik" is guaranteed 97% minimum sodium cyanide. Maximum impurities are held so low you get an *extra pound* of active cyanide in every 100 lbs. you buy. And because it can be used in *all* applications, all-purpose "Cyanobrik" can help *you hold inventories down, simplify your purchasing.* Look at these high-quality specifications:

NaCN—97% min.; NaCl—0.2% max.; Sulfides as S—0.0005% max.

For more information just give your local Du Pont Distributor a call, or

DISTRICT AND SALES OFFICES:

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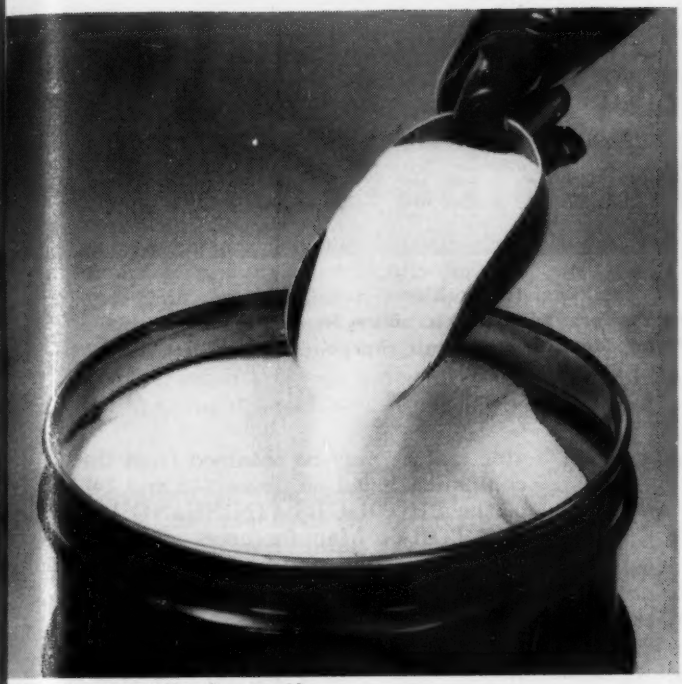
Chicago 46. 7250 N. Cicero Ave., Lincolnwood
Cincinnati 2.....2412 Carew Tower
Cleveland 20.....11900 Shaker Blvd.
Detroit 35
Kansas City
Los Angeles



This is "Cyanogran" M sodium cyanide.

EASY-TO-DISSOLVE "CYANOGRAN" M has the same high purity of all-purpose "Cyanobrik"—97% minimum sodium cyanide. It passes through a 10 mesh screen, but not a 50 mesh screen . . . is easy to handle because fines and dusting are eliminated. "Cyanogran" M is also shipped in full-open-head drums.

and new Cyanogran® M of sodium cyanide 97%

New "Cyanogran" M, a granular easy-to-dissolve form of all-purpose "Cyanobrik" sodium cyanide—at no extra cost!

"Cyanogran" M was developed by Du Pont specifically for dry compounders who require a uniform particle size and for those who desire sodium cyanide in a more rapidly soluble form. It is controlled in size during manufacture so that it will pass 100% through a 10 mesh screen and will be retained by a 50 mesh screen. Result: "Cyanogran" M is easy to handle due to absence of fines and dusting.

"Cyanogran" M and all-purpose "Cyanobrik" are sold at the same low price. Both are made at Du Pont's modern Memphis, Tenn., plant—a reliable domestic source of supply for you. Du Pont and its conveniently located distributors assure you prompt delivery. Here are the specifications for "Cyanogran" M:

NaCN—97% min.; NaCl—0.2% max.; Sulfides as S—0.0005% max.

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Du Pont's experts are always ready to provide on-the-spot service. They're backed by the facilities of Du Pont's new 2-million-dollar sales-service laboratory to help solve *your* problem.

a call, or write your nearest Du Pont District Office listed below.

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Kansas City 20*.....Guinotte & Mich. Ave.
Los Angeles.....Box 70, El Monte, Calif.
New York 1.....350 Fifth Ave.
Phila.....308 E. Lancaster Ave., Wynnewood
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. . . THROUGH CHEMISTRY

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finishing clinic

Suggested solutions to problems submitted by readers. Send your problem to our Editorial Staff. There is no charge.

Brass Finish on Steel Parts

Question: *Can you tell us who supplies brass finishes that can be used on steel parts?*

We have seen this finish on steel furniture and it appears that the steel has been brass plated.

A. J. H.

Answer: There are three general methods of obtaining a brass finish on steel parts.

One method is to use a brass or gold lacquer over the steel parts. Manufacturers of lacquer, many of whom supply metallic finishes, are listed in the PRODUCTS FINISHING DIRECTORY.

Another method of obtaining this finish would be to brass plate the steel and then use a clear lacquer or synthetic finish as a top coat. Information on brass plating processes may be obtained from the companies listed on pages 134 and 135 of the PRODUCTS FINISHING DIRECTORY under the heading, "Plating Processes and/or Chemicals, brass."

Another method of obtaining a brass colored finish is to zinc plate the steel, treat it with a special chromate dip, and then dye the surface. The final surface should be protected with lacquer or a synthetic finish, as outlined previously. Information on zinc plating may be obtained from the companies listed on pages 148 and 149 of the PRODUCTS FINISHING DIRECTORY. Manufacturers of chromate conversion coatings are listed on pages 49 and 50.

★ ★ ★

Enamel Finishes

Question: *We are interested in sources of supply for the so-called "runoff" lacquer or enamel finishes as applied to both bronze metal and/or aluminum metal. This is also sometimes known as an "antique lacquer finish" and perhaps by other names with which we are not familiar.*

We are interested in a finish that can be applied without the necessity of any subsequent relieving of the highlighted areas.

C. W. J.

Answer: With this letter we are sending a copy of the PRODUCTS FINISHING DIRECTORY in which you will find the manufacturers of lacquer listed on pages 98 through 102. The addresses of these companies are listed in the section of the Directory beginning on page 201. We are sure that inquiries to several of the companies listed in the Directory will enable you to secure the finish you desire.

Metered-Feed Units

Question: *We may have to use potassium dichromate or permanganate in the boiling chamber of our still to overcome a severe seasonal contaminant.*

If there are metered-feed units available designed specifically for this operation, we would appreciate the manufacturers' names and addresses.

If there are no specific units on the market, could you recommend a product that might be adapted to our need?

L. W. U.

Answer: A "proportioning pump" would be required if the material must be forced into the chamber against pressure. Many of the companies listed under the heading "Pumps for Chemical Service" on page 157 of the PRODUCTS FINISHING DIRECTORY can supply you with proportioning pumps.

If you do not need a pump but can add the potassium dichromate by gravity, several plating supply companies can furnish a relatively simple device to add this material at a predetermined rate. The quantity which you must add per hour as well as the pressure requirement will determine the feasibility of the latter suggestion.

★ ★ ★

Finishes For Outdoor Aluminum Lighting Fixtures

Question: *We have been receiving your very fine magazine and special notice has been given to your "Finishing Clinic" section. Like many other manufacturers, we have a finishing problem that seems to be characteristic of our type of product and is not a common problem in the industry.*

Our firm manufactures outdoor aluminum lighting equipment. Many of our parts are combinations of aluminum castings and wrought aluminum alloy extrusions. The castings and the wrought alloy extrusions are joined by welding.

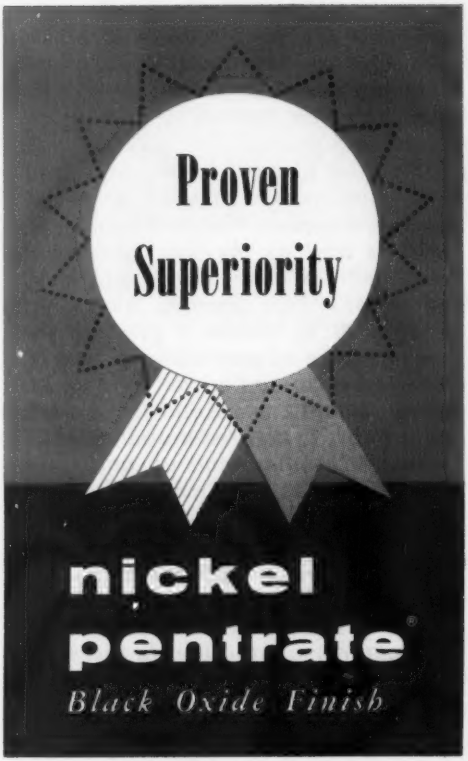
When we attempt to have our products anodized or chemically treated, there is a definite discoloration on the weld as well as the cast component. Investigations have been made covering metallic-type finishes; however, it is difficult to obtain a product that has any type of guarantee of long life in relation to fading as well as salt spray conditions. Another essential for a finish to be used on our products is that it should stand up under contractor field installation abuse.

To sum up our problem, we require a finish that is color fast, that can stand up under vigorous installation abuse, and remain undamaged from either a salt spray condition or normal outdoor weathering. Is there such a product on the market today?

J. E. A.

Answer: It is quite possible that engineers of aluminum suppliers can recommend the proper aluminum alloys and welding rod so that you will avoid discoloration of welds during anodizing and chemical treatment.

With reference to organic coatings which would cover your products uniformly and eliminate the problem of discoloration, you might care to investigate the group of coatings known as catalytic coatings. Many of the major paint manufacturers supply these coatings and can provide you with information on the products which they have available. To secure information on products of this type, we suggest that you contact some of the manufacturers listed in the PRODUCTS FINISHING DIRECTORY under the heading, "Paints, acid- and alkali-resistant" beginning on page 118.



All original claims for the performance of Nickel Pentrate have been dwarfed by reports from users. It's faster. It gives deeper, more uniform blackening. It provides better corrosion protection and more abrasion resistance. There's less dragout. In every test, Nickel Pentrate has proven its superiority in every way.

Nickel Pentrate is the only one-bath black oxide finishing salt in the market containing nickel. Fully covered by U. S. and foreign patents, it is readily available to improve the quality of your black oxide finishing of steel and at the same time hold down production costs.

Send now for descriptive literature giving the complete story of Nickel Pentrate and how it can help you in your business.

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Finishing Clinic . . .

Zinc Phosphate Finish

Question: *We have been asked to quote on a job involving a zinc phosphate finish.*

Where could we get information on this process?

F. J. B.

Answer: Manufacturers of phosphatizing chemicals are listed in the PRODUCTS FINISHING DIRECTORY. These manufacturers can advise you concerning the proper use of their products.

★ ★ ★

Strippable Plastic Coating

Question: *We are interested in finding a strippable coating material for protecting white painted transformer cases through various steps of manufacture. At one point of the assembly line, asphalt compound at 215 deg. C. is poured into the case.*

The coating should be able to withstand this temperature, as well as subsequent handling with gloves, while still hot.

The cases are light-gauge sheet metal (0.029) and range in overall dimensions up to 2½ x 3 x 18 inches. The white paint is a hard, baked-on, dip-coated finish.

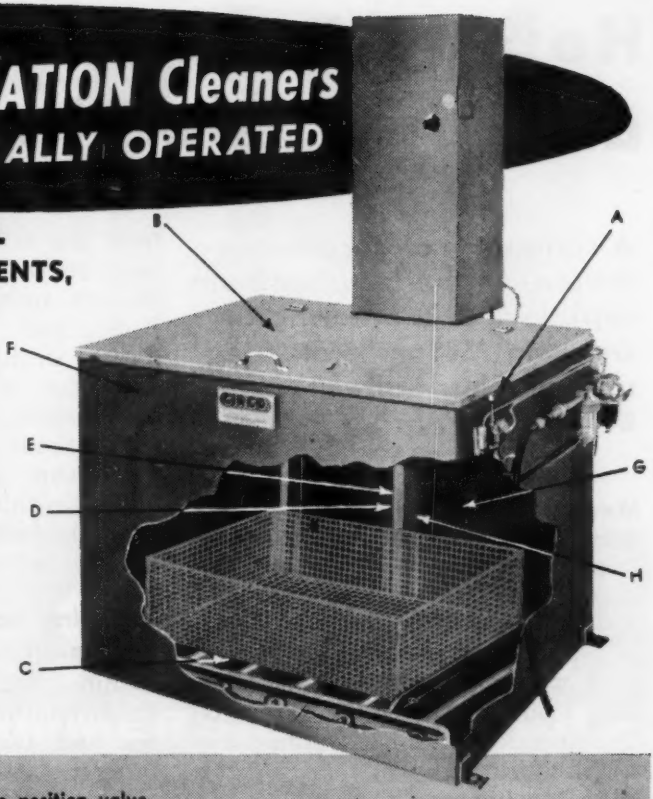
Since the coating we seek is probably not a standard product, we would like to know the names of some companies with facilities for special formulations.

R. F. K.

Answer: Manufacturers of such coatings are listed on pages 59 and 60 of the PRODUCTS FINISHING DIRECTORY. These companies may have standard products that will answer your needs, or they may be able to formulate a special coating for use in your application.

Power AGITATION Cleaners
PNEUMATICALLY OPERATED

FOR USE WITH ALL CLEANERS — SOLVENTS, EMULSIONS, PHOSPHATIZING AND ACID SOLUTIONS FOR HEAT TREATING, QUENCHING, WAX AND PROTECTIVE COATING AND OTHER LIQUID PROCESSING.



A. Only one control—three position valve. 1. raises rack. 2. lowers rack for soak. 3. agitates rack.

B. Hinged steel cover. Fusible link causing lid to drop in event of fire, optional.

C. Supplied with grate platform. Roller rack platform available.

D. Length of up and down stroke variable from 4" to 27"

E. Number of strokes variable from 32 to 70 per minute.

F. Tank shell is fabricated of solid heavy gauge hot rolled steel.

G. Available with immersion heating choice of steam - gas or electric.

H. The same air operated piston lowers, raises and agitates the rack.

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How to Polish and Buff Aluminum

A summary of recommendations made by aluminum suppliers at a meeting of General Motors' Polishing and Buffing Sub-Committee . . .

Mechanical finishing of aluminum — from grinding a rough casting to color buffing and removal of buffing compound— was the topic for a group of aluminum suppliers' technical representatives who spoke at the Behr-Manning Company's plant in Troy, N. Y., during the Behr-Manning-sponsored Third National Coated Abrasives Machinery Show.

Host for the discussion was General Motors' Polishing and Buffing Sub-Committee. The auto makers heard the following men describe methods and materials for producing various surface textures on aluminum: Lamont J. Benson, Kaiser Aluminum & Chemical Sales, Inc.; H. V. Seals, Revere Copper & Brass, Inc., Rome Manufacturing Company Division (Mr. Seals prepared his remarks in cooperation with T. P. Dunn, works manager, and F. W. Merry, assistant works manager); Jack B. Kerr, Engineering Services Dept., Reynolds Metals Company; and C. L. Bissonette, Aluminum Company of America.

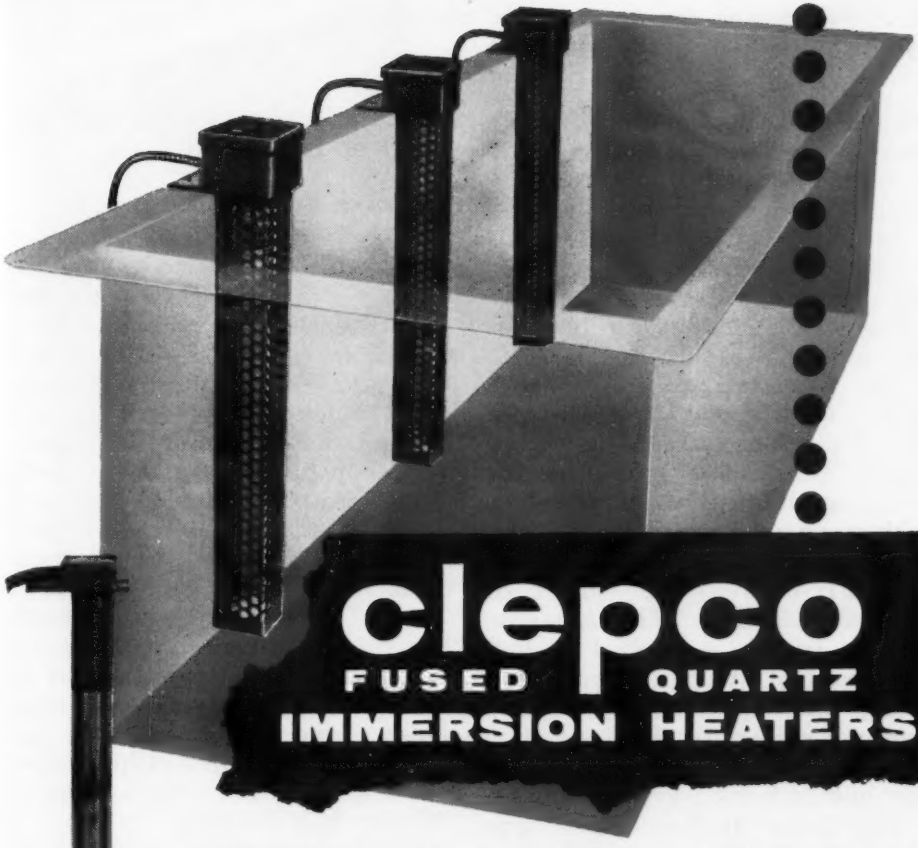
The following material extracted from the talks presented by these men is an excellent summary of modern techniques of polishing, buffing and related operations performed in finishing aluminum. The discussion is confined to mechanical finishing, using lathes and other conventional polishing and buffing equipment, as distinguished from other finishing methods, such as blasting, barrel finishing and loose abrasive finishing.

Polishing and Buffing Sequence —*Lamont J. Benson*

Initial surface finish and final finish required determine the number and types of operations performed. Listing the operations that must be performed on a "rough" part which requires a mirror finish gives us an outline of all the steps normally performed in preparing aluminum parts. A rough casting or a thick sheet with deep scratches would require all of these steps. An extrusion or a thin sheet with fewer imperfections would require only a few of these operations. Steps such as color buffing could be omitted if high reflectivity is not required.

(1) Grinding. Silicon carbide abrasive of 20-60 grit size on faced wheel, operated at a maximum peripheral wheel speed of 4,000 ft./min., lubricated with suitable material to prevent wheel pick-up.

(2) Roughing. Emery or fused aluminum oxide abrasive 60-120



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". . . we prefer the appearance obtained by the aluminum oxide abrasive."

grit size on faced wheel. A peripheral wheel speed of 5,000 to 6,000 ft./min. with proper lubrication of facing is recommended.

A variation of this step, as well as the one immediately following, is the use of a backstand idler with abrasive belt suitable for flat surface finishing. Lubrication needed.

(3) Greasing. A wheel similar to that used in Steps 1 and 2 faced with 180-220 abrasive. Wheel speed approximately the same as for roughing, lubrication of wheel as with other setup wheels.

(4) Buffing. Wheels usually are open air-cooled type made of stitched bias-cut muslin. Abrasive, usually tripoli, is applied to buff by means of stick or spray. Peripheral wheel speeds up to 7,000 ft./min. are customary. This operation accomplishes actual metal flow that fills in cuts formed by polishing.

(5) Color Buffing. Same type of wheel and speeds as with buffing. Abrasive used may be Vienna lime or white silica compound. Often no compound is used on the final wheel. It is used as a wipe, with residual tripoli on the work from the buffing operation as the only abrasive.

Polishing with Setup Wheels —*Lamont J. Benson*

Setup wheels are often used for removing irregularities in the early stages of the polishing operation. These wheels are made by coating muslin with the desired abrasive. Hide glue was once used exclusively for attaching these abrasives, but in recent years silicate cements have been used for this purpose.

Abrasive Belt Polishing —*C. L. Bissonette*

Coated abrasives—mostly in the form of abrasive belts — are also used extensively in polishing. Most operations are performed on a contact wheel, although some polishing is done on the slack of the belt.

Equipment used for these operations includes backstand idlers, swing grinders, and conveyorized polishing machines. Brush-backed sanders and polishing wheels made of a series of coated abrasive "leaves" have been used with excellent results for certain applications.

A number of factors should be considered in applying a polished finish. Type of abrasive, grit size, belt speed, pressure and lubrication are important considerations in abrasive belt finishing.

Our choice of an abrasive for polishing aluminum would be aluminum oxide glue bonded to a cloth backing. Silicon carbide abrasives perform well and in general give a sharper cut; however, we prefer the appearance obtained by the aluminum oxide abrasive.

It is our feeling that in aluminum polishing, the grain is seldom worn, and that a coated abrasive ceases to perform satisfactorily because of backing failure, bond failure or loading.

We have evaluated resin bonds, but the results failed to show sufficient advantage to offset the cost.

Paper backing proved unsatisfac-

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. . . part of Pennsalt's complete metal preparation service

Let Pennsalt engineers show you how to get best possible metal preparation at lowest cost. Our specialists survey your process, recommend chemicals to fit your needs, help supervise installation and startup, and follow through with regular service calls to keep your finishing line running at its best. Our nationwide field organization gives you prompt attention, both on scheduled service and in emergencies.

Pennsalt metal processing compounds—a complete line. You can be sure of the right chemicals for the best job at lowest cost, because Pennsalt makes every type of metal cleaner, phosphate coating and drawing compound you'll need. Abundant supply, too, because Pennsalt makes its own basic materials.

Pennsalt machinery . . . designed for savings. Pennsalt custom-engineers a complete line of automatic machines for cleaning, applying deep-draw lubrication, paint bonding, paint stripping and other finishing operations.

. . . a better start for your finish

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Three Penn Center, Philadelphia 2, Pa.

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tory, and we have stayed with "X" and "J" weight cloth. "J" weight is preferred where the contact wheel diameter is small.

In general, grit size is dictated by the finish required; 60 to 320 grit is used. In some cases, it is necessary to use a series of grit sizes to achieve the desired finish. A situation of this type usually results when there are significant defects to be removed from the work, and the final grit size is not suitable for this removal.

The pressure applied during polishing is important, and only experience will establish the correct pressure.

Lubrication is of prime importance in polishing aluminum. One reason a belt ceases to polish properly is that it becomes loaded with metal particles. Adequate lubrication decreases loading. We apply lubricant either by running the belt through a lubricant bath or by spray guns equipped with splatter tips. Splatter tips are preferred because they reduce misting, which is both a potential fire hazard and a waste. A vapor degreaser can be very effective in unloading a belt and extending its useful life.

There are a number of other factors which are important: holding fixtures, work-table surfaces and condition of contact wheels. All of these factors are minor, but they contribute to polishing success. Holding fixtures are usually designed and built in our shop for a particular job. Contact wheels are redressed in our machine shop periodically and are sent to a jobber for re-molding when badly worn.

"I didn't want to disturb his sleep."

Scratch Finishing
—J. B. Kerr

Scratch finishes are widely used, especially for architectual applications—door frames, window frames, mullions, hand rails and spandrel panels.

The advantage of a scratch finish is that a pleasing, uniform line finish can be produced with very small expense, using unskilled workers. Scratch finishes are widely accepted because they give texture and luster to the aluminum.

Scratch finishing equipment is not expensive. Excellent work can be done using a stroke or platen grinder. For small-volume work, these can be made in your shop or converted—by merely using different belts—from steel or wood grinders. Drum or cylinder grinders can be used for wide, flat surfaces.

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The PAINTING TOOL
ALL Industry
has been waiting for

The NEW

RANSBURG

NO. 2 PROCESS ELECTROSTATIC HAND GUN

CUTS PAINTING COSTS!

Saves Paint because there's no waste. Now, for the first time, the high efficiency of Ransburg's No. 2 Process automatic equipment is available to you in the NEW Electrostatic Hand Gun.

Saves Labor, Increases Production because it is faster on many types of articles such as those fabricated from perforated and expanded metals, tubing, rod and wire. This is due to the "Wrap-around" nature of electrospray which paints ALL sides of such articles from one side only.

Saves in Equipment because no conventional spray booth is required—no water-wash, no sludge recovery! Uses no compressed air for atomization.

Saves Building Heat Loss because only mild ventilation for removal of solvent vapors is necessary, and . . .

Maintenance Costs Are Cut because clean-up and maintenance labor is only a fraction of that required by other, less efficient painting methods.

See how YOU can save in your own finishing department, and at the same time, improve the quality of the work. Write for literature and information showing how the Electrostatic Hand Gun has been proven on different products in a variety of industrial plants.

Call or write | **RANSBURG Electro-Coating Corp.**

Box-23122, Indianapolis 23, Indiana

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Vonnegut wheels can be used for nonuniform or contoured surfaces. Offhand polishing equipment is available in a wide variety of designs for use on small parts. Canvas buffing wheels, using stick abrasive, can be used for small irregular parts and for finer finishes.

Tremendous advances have been made in the past few years in the quality of abrasive belts. It is now possible to obtain abrasive belts in any grit, made of several abrasive materials, using various binders and backings.

We do not use any one grit size as a standard. When a customer specifies a scratch finish, we try to obtain an actual production part similar to our customer's part and scratch finish it. This part is sent to the customer for approval. The procedure used to obtain the approved sample is then set up as standard.

Since most of our scratch finishing is done on large flat architectural sections, we do most of our work on drum sanders. Each morning the finishing foreman puts new belts on the machines and checks to see that they are ready to run. During the day a constant check is made to be sure that pressures are correct and that belts are not worn excessively. Since the foreman makes these checks and changes belts when needed, the workers need only feed metal into the machine and stack the finished metal.

Buffing

—C. L. Bissonette

Buffing improves the lustre of metal. In buffing, the abrasive is embedded in a grease binder rather than being fixed to a wheel or belt. The buffing compound is applied to a buff wheel, where the heat generated softens the binder and the abrasive becomes attached to the wheel. The compound application is repeated frequently during the buffing operation.

Buffing is accomplished on hand, semi-automatic and automatic equipment.

We use bias ventilated buffs for the most part, but a few spirally sewn piece buffs are still used.

Buffing compound is used in both the liquid and bar form. Liquid tripoli is sprayed on the buffs automatically from either a pump or pressure system. Both bar and liquid compounds perform well.

Overspray and gun failure are common difficulties encountered with liquid compounds. The bar compound is applied both automatically and by hand. We feel that an automatic bar applicator offers both economic and safety advantages and is a worthwhile investment.

The density or hardness of the buff, the buffing compound, peripheral speed and pressure against the buff constitute the main variables in aluminum buffing.

A hard buff has the best cutting characteristics, but it can also result in streaking or cloudy areas. The hardness of a buff is dependent upon one or more of the following:

1. Thread count of the cloth.
2. Spacing of the stitching.
3. Amounts of cloth gathered around a given circumference.
4. Spacers.
5. Peripheral speed.

Although many good buffing compounds are available, some perform

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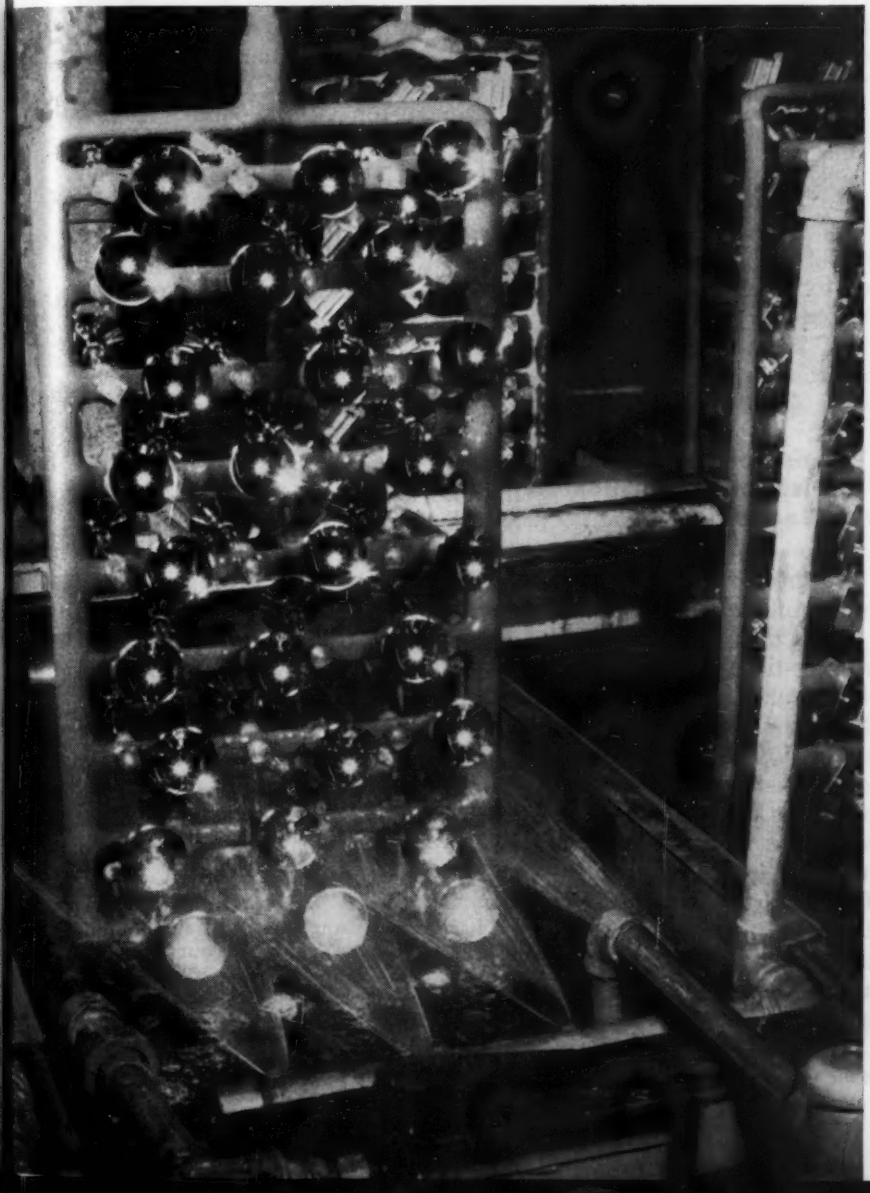


ASARCO

AMERICAN SMELTING AND REFINING COMPANY

"If an anodized finish is to be applied . . . additional thought must be given to other factors . . ."

better on a given job than others. The best way to select a compound is by testing it in your operations.

Increased peripheral speed increases effective buff hardness. Variable-speed lathes offer an advantage in this respect. In general the spindle speed used in buffing aluminum is about 2,350 r.p.m. (8,500 ft./min. peripheral speed).

Increasing the pressure against the buff usually increases the cutting rate, but this can be carried to excess. In most cases, pressures used in buffing aluminum are less than those required for harder metals.

"Color buffing" is accomplished with conventional hand-applied coloring compounds and unstitched muslin buffs. We have used cut and color compounds successfully on certain items.

Additional Considerations for Producing Satisfactory Finishes —*Lamont J. Benson*

The discussion up to this point has been confined to mechanical polishing and buffing with no consideration other than that of producing a mirror-like buffed finish. This usually is sufficient if the ultimate is the polished and buffed finish presently furnished on aluminum cooking utensils and comparable items or if the buffed surface is to serve as a base for the application of copper, nickel or chromium plating. However, if an anodized finish is to be applied following polishing and buffing, additional thought must be given to other factors such as:

(1) Alloy selection.
(2) Selection of abrasives and their usage.
(3) Removal of polishing and buffing residues.

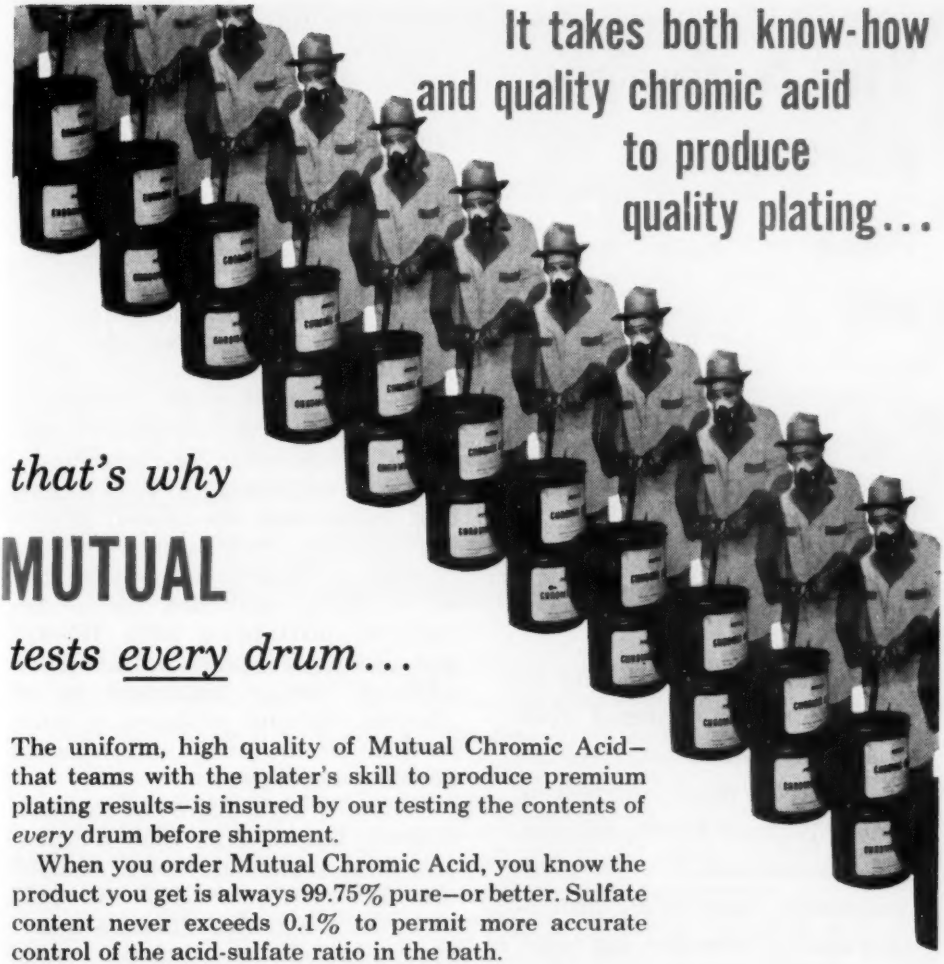
Now let us consider each of these points:

Alloy Selection*. If the proposed application calls for a polished or buffed finish only, then the common sheet alloys 1100, 3003 or 5005 and the extrusion alloy 6063 should prove satisfactory. Proper temper and grain size must be considered in order that the alloy's formability allows the item to be produced and that a minimum of orange peel results. Orange peel, if excessive, adds to the polishing and buffing problems.

On the other hand, if a high degree of specularity is desired after anodizing, then domestic sheet alloys such as high-purity clad reflector sheet, alloys 5357 and 5457 or 5357 and 6463 extrusions should be specified. The same precautions regarding resultant orange peel upon forming must be taken with these alloys as with the common alloys.

Abrasive Selection and Usage. If silicon carbide is used in polishing, a residue frequently is imbedded in the surface of the aluminum, which, upon subsequent anodizing, will result in a darkened, mottled appearance. Therefore, if anodizing is to follow, it is ad-

*Additional data on alloy selection is presented in the article "Four Steps to Successful Anodizing," published in PRODUCTS FINISHING, January, 1959, pp. 38-46.



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visable to utilize aluminum oxide abrasives in polishing.

With the buffing operation, however, more difficulty is encountered, since residues of the almost universally used buffing compounds tripoli and amorphous white silica can be expected to have similar discoloration effects. Added to the possible discoloration from the silicas is that of iron impurities present in the tripoli. This then, since no other suitable substitute abrasive is available, can only be minimized by care in buffing to prevent burning-in or imbedding of compound.

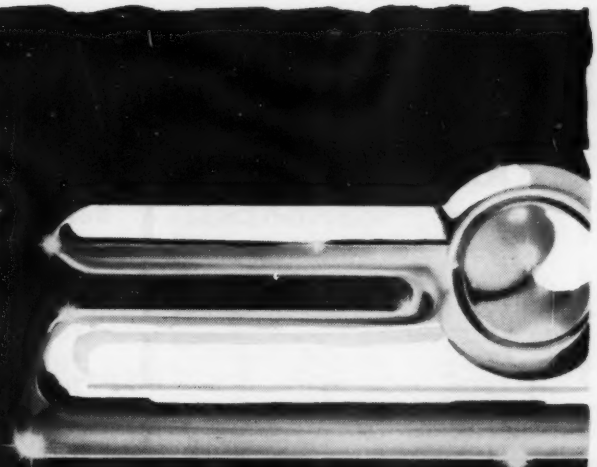
Removal of Surface-Adhering and Imbedded Abrasives. One of the accepted architectural finishes applied to 6063 extrusions is that of anodizing preceded by a mechanical polishing with 180-220 grit. Before the parts are anodized a short etching treatment in an alkaline etchant produces a semi-lustrous satin finish and removes abrasive residues.

Where a high degree of luster is desired, however, as with automotive trim items fabricated of 5357 and 5457 sheet or 5357 and 6463 extrusions, a buffed finish is necessary. And alkaline etching cannot be used to remove abrasives since "dulling" will result. Therefore, to prevent this reduction in specularity, it is common practice to use either chemical or electrochemical brighteners. These remove polishing and buffing residues and simultaneously brighten the parts.

Buffing a Typical Part —*H. V. Seals*

Having discussed the methods and materials to be used, let's take a typical part—an aluminum spout

UNMATCHED CORROSION RESISTANCE



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The Harshaw Chemical Company after years of research and development work was the first to find that a *sulfur-free* nickel offers greater corrosion resistance. This fact led to the development of the Harshaw Perflow nickel plating process. Further research showed that use of the sulfur-free Perflow nickel deposit as a base coating, followed by a bright nickel deposit from a *compatible* bath, would give a Duplex deposit with a further improvement of corrosion resistance. Performance data, by both accelerated tests and outdoor exposure, from leading automobile manufacturers and parts suppliers indicate that the Harshaw Perflow-Perglow Duplex nickel plate is comparable to and frequently better than, buffed gray nickel and is unequalled by any bright nickel.

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1. Exceptionally high plating speeds—with air or mechanical agitation.
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PRICES—12c per inch for basket lengths 18 inches or longer. Side clip 15c extra. Increments 3 inches. Curved containers one size only, 27" for 14" and 16" diameter barrels 15c per basket additional.

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—and see exactly how it's buffed.

Material: 1 13/32-inch O.D. by 0.032-inch aluminum tubing, type 5005 H 34 temper.

Operations: Cut to length, taper, wash, face end, buff, wash, pierce.

Buffing Equipment: 3-head Packer dial buffing machine with eight expanding chucks. Each head, 5 h.p. 3,450-r.p.m. motor. One-inch shafts with buff wheel directly on motor shaft. Maximum wheel diameter, 12 inches.

Buff Wheels: Seven-inch center No. 4 16-ply airway-type.

Compound: Cut down: H-VW-M 2B156 applied to each piece with applicator used on first two wheels.

Color: No. 52 Stevens Tripoli, applied by hand on last wheel every 5 or 6 pieces.

Time: Six seconds buffing per station, or 12 seconds cutting and 6 seconds coloring. 444 pieces per hour.

After buffing, parts are dropped into an emulsifying solution operated at 100 deg. F. Afterwards, parts are washed in Enthone N.E. 6 aluminum cleaner and rinsed in cold and then hot water.

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Through the use of new techniques and new plating equipment, steel pipe is now being internally plated with nickel. This nickel-plated pipe, which is used in the chemical and allied industries, combines the corrosion-resistance of nickel with the strength of seamless steel piping.

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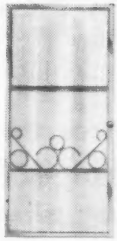

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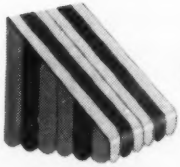

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The Amchem Alodine process forms an amorphous coating which becomes an integral part of the metal, enhances the natural corrosion resistance of the aluminum and provides an excellent bond for paint.

Alodine's simplicity, speed and economy as a prepaint treatment has gained widespread commercial acceptance in a wide variety of product applications.

Beyond product, Amchem provides the metalworking industry a complete service—processes, technical and engineering assistance, installation and instruction service—for corrosion protection, paint bonding, or other metalworking problems.

Write for complete information contained in Bulletin 1424A describing the uses of Amchem Alodine, as well as other literature pertinent to Amchem chemical conversion processes for the metalworking industry.

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Metal Decorating: Fast Protection, Beauty

Metal decorating has grown rapidly since World War II. Here's how National Can's decorating plant does it today . . .

By C. I. HUG
Plant Manager
Warren Metal Decorating Co.

Metal decorating continues to grow as a method of finishing many metal products. It's a fast, low-cost method of protecting and decorating. Basically, the term "metal decorating" is applied to the process of finishing that involves a combination of roller coating and lithographing flat sheets that are subsequently formed, or possibly left flat. Typical products finished by metal decorating methods include toys, machine parts, cans and packages, displays, signs and automotive parts.

One plant devoted exclusively to this type of finishing is Warren Metal Decorating Company, Warren, Ohio. Although wholly owned by National Can Corporation, this plant is operated independently. Half of the plant's production is devoted to products other than those manufactured by National Can. The plant is a job metal decorating plant, handles almost any kind of metal decorating assignment, will do all or any part of the task, from design through printing and manufacture of the finished products—signs, housewares, cans, premiums and so on.

Equipment

Warren Metal Decorating's roller coating equipment consists of two 10-by-38-inch Wagner spot coaters and one 12-by-38-inch Wagner spot coater, equipped with double scraper to prevent "scumming" the back side of coated sheets.

Printing equipment includes two single-color Hoe presses and one tandem Hoe. All printing presses have tandem coaters for wet-varnishing the printed sheets.

Both roller coating units and tandem wet-varnishing units are equipped with spot-gaging devices, so that sheets can be selectively coated.

Metal Decorating Process

The stack of clean, sorted metal sheets, their size depending on the job, is placed in the Dexter auto-

matic sheet feeder (Fig. 1). Magnets separate each sheet as it is fed into the line.

The first step in metal decorating is to apply a base coat of enamel, which serves as an undercoat or background for subsequent printed designs or decorations. In some cases, the process may stop here, with the enamel serving as the protective and decorative coating in applications where no design is needed.

The sheets are held in proper position by a spot-gaging device, which consists of hold-down fingers equipped with spring tension. This device holds the sheets in position so that the entire surface is coated or so that certain areas are left uncoated. Adjusting the sheets so that a precisely defined area is left uncoated is known as "registering." Sheets may have to be registered so that no coating is applied to the area of the sheet that will later form the seam of a can. It is important that no coating be applied to this area, since it will later have to be soldered.

The sheets are positioned accurately, because a slight variation in position of the film on the surface will render the metal sheet or products made from it unfit for use.

As the sheet moves through the unit, the enamel, in whatever color the job requires, is rolled onto the metal sheet (Fig. 2). A non-pigmented clear gold protective enamel, known in the metal decorating trade as "gold lacquer," is one finish that is applied.

The painted sheets are placed vertically on wickets and fed into a tunnel-like oven, which may be as

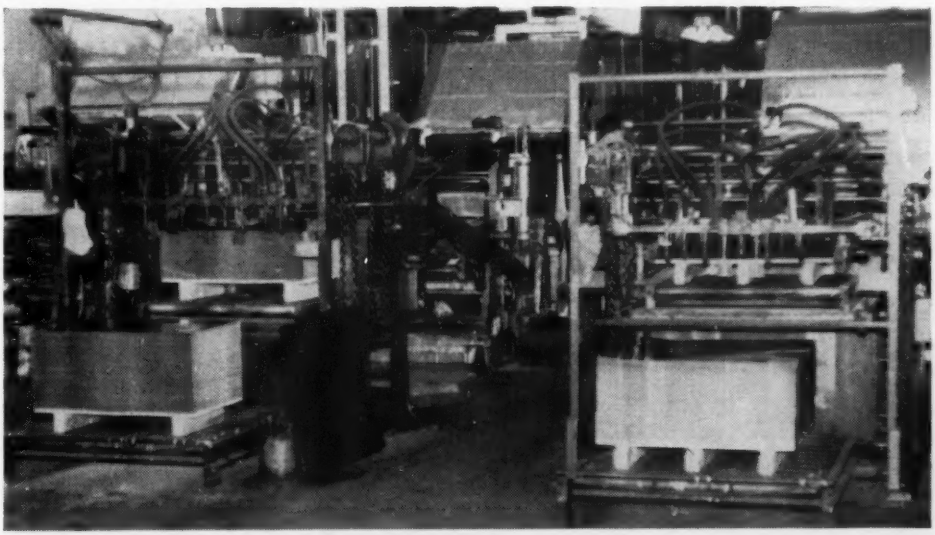


Fig. 1—Two Dexter automatic sheet feeders feed two metal decorating lines. Magnets separate the sheets so that they can be fed into the line one by one. A spot-gaging device positions each sheet accurately so that proper area is coated.

"Occasionally, an intricate color pattern necessitates ten or more printings."

long as 120 feet, where the enamel is baked. The oven temperature is electronically controlled. For maximum protection and beauty, the baked film must be cured uniformly over every square inch of metal surface. The oven must distribute heat evenly over the entire sheet, temperature varying no more than five degrees. Each sheet is baked for 10 to 12 minutes at temperatures up to 400 deg. F.

The coated and baked sheets are unloaded from the opposite end of the oven into an automatic stacker (Fig. 3).

A protective coating can be applied to the opposite side of a sheet

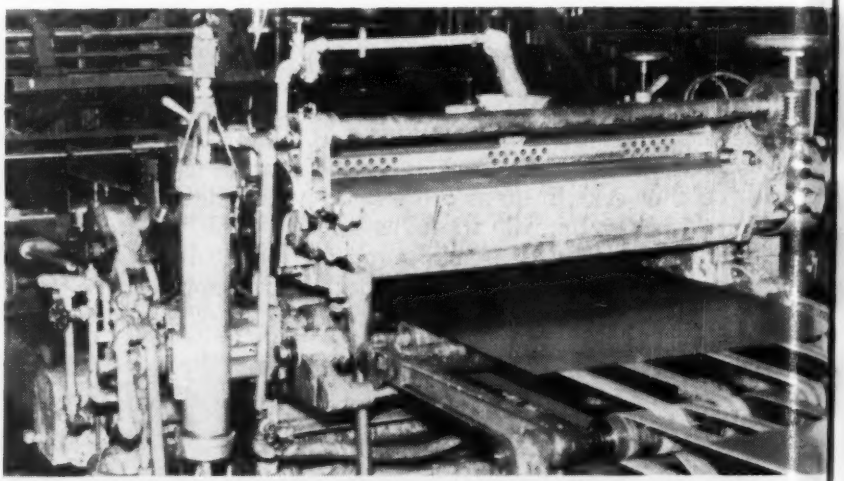


Fig. 2—Close-up of roller coater applying enamel to flat sheet. Enamel is baked in long, tunnel - like oven.

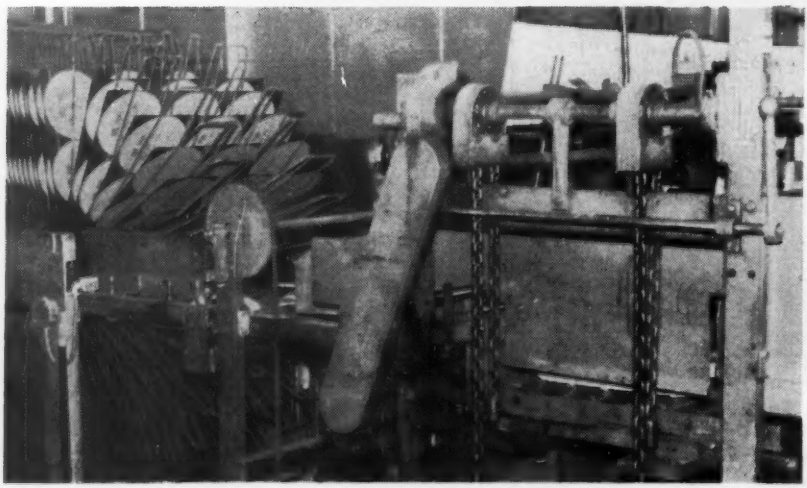


Fig. 3 — Sheets are automatically stacked as they emerge from the oven. (Photos courtesy National Can Corporation.)

in the same manner as the decorative coating. Protective coatings are applied as backings on signs which must resist weather; they are used as phenolic interior linings for cans, to resist acidity of contents; and as coatings for paint roller tanks, to resist paint chemicals.

Lithographing

The coated and baked sheets are often lithographed to produce designs or labels. A load of sheets is placed on an automatic sheet feeder at the head of the line and the sheets are continuously and automatically fed into an offset lithograph press. A one-unit press prints one color in each pass, while a tandem, or two-unit press, prints two colors in each pass. The number of colors desired determines the number of passes required. Three prints are average. Many products are printed four or more times. Occasionally, an intricate color pattern necessitates ten or more printings.

The metal lithographing ink must be dried in an oven. The ink must be compounded of heat-resistant pigments; it must dry quickly at high temperatures; and it must withstand fabricating stress.

A protective clear varnish is applied after the final pass through the lithograph press, usually while the ink is still wet. Varnish protection assures service and quality of print.

Each time the sheets emerge from a pass through the line, they are automatically stacked. After the final pass, a turnover machine may reverse the load of sheets so that the customer receives each sheet facing the desired direction, decoration up or down.

Although offset lithography is not new, metal lithography grew rapidly following World War II.

Metal decorators have continued to lead the field in improving the entire lithography process. Improvement of the roller coating process parallels lithography's growth. Indications are that lithography and roller coating will continue to decorate an ever-increasing number of metal products.

★ ★ ★

Guide to Electrodeposited Coatings and Other Surface Treatments for Metals. By D. E. Couch and J. W. Hensley, U. S. Naval Ordnance Test Station. Order PB 131-496, from OTS, U. S. Department of Commerce, Washington 25, D. C. 29 pages. Price, 75 cents.

This information was collected and tabulated to give the engineer a quick, reliable guide to the properties and uses of electrodeposited metals and to other chemical and electrochemical treatments used in metal finishing. The report is a generalization of the field of electrodeposition and does not attempt to explain the details involved. Nevertheless, it will provide aid in rapid evaluation of electrodeposited metals and other surface treatments.

Chapters are devoted to discussion of the field and definition of terms. Tables are included for characteristics of electrodeposits, electrodeposited coatings, special chemical and electrochemical processes, and special coloring processes for decorative and photographic purposes.

Treatment of Plating Wastes by Ion Exchange

How to use ion exchange processes to dispose of or recover chemicals from plating rinse tanks . . .

By R. F. HEIDORN and H. W. KELLER

Illinois Water Treatment Co.
Rockford, Illinois

Many platers who once directed the drain pipe from the rinse tanks to the city sewer now find that the law prohibits this practice, and that water leaving the plant has to be free of harmful contaminants. What's more, many plating chemicals are expensive — too expensive to throw away.

Ion exchange is one method of concentrating rinse waters (Fig. 1) so that they can be neutralized more easily. It also makes possible recovery of valuable materials. As a byproduct, ion exchange produces deionized water, which is useful in rinse tanks and in making up new plating solutions.

Basically, an ion exchanger is a device for removing one ion from solution and substituting it with another ion to produce a solution that has a more desirable composition than the one being treated. The basic material involved is a granular solid known as ion-exchange resin, which has the property of exchanging one of its ions for one of those in the solution being treated.

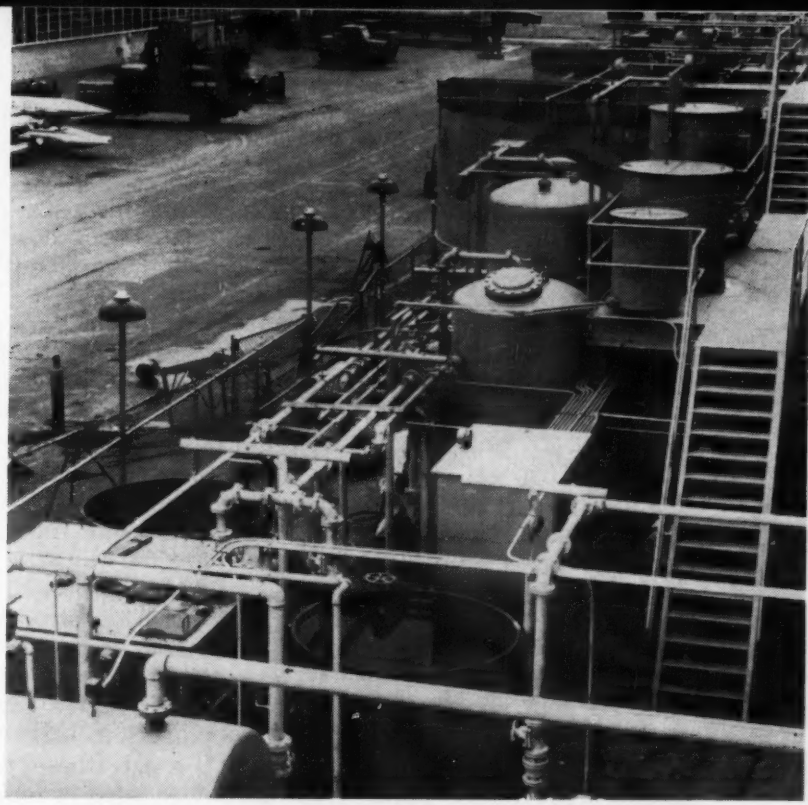
The process itself is cyclic. The solution being treated passes through the exchanger until it exhausts the resin (the resin has no ions left to exchange). Then the process is stopped and the ion-exchange resin regenerated by another chemical that replaces the ions given up in the ion-exchange process, converting the resin back to its original composition. Thus the resin itself can be used indefinitely.

Ion exchange can be used to concentrate plating wastes that must be neutralized prior to discharge, or, when economics dictate, it can be used to recover metals and plating acids.

Ion Exchange in Destruction

When no attempt will be made to recover materials, all contaminated rinse waters are piped into a common tank. Such a solution could contain cyanides, chrome, copper, nickel, acids and alkaline cleaners.

The combined plating waste



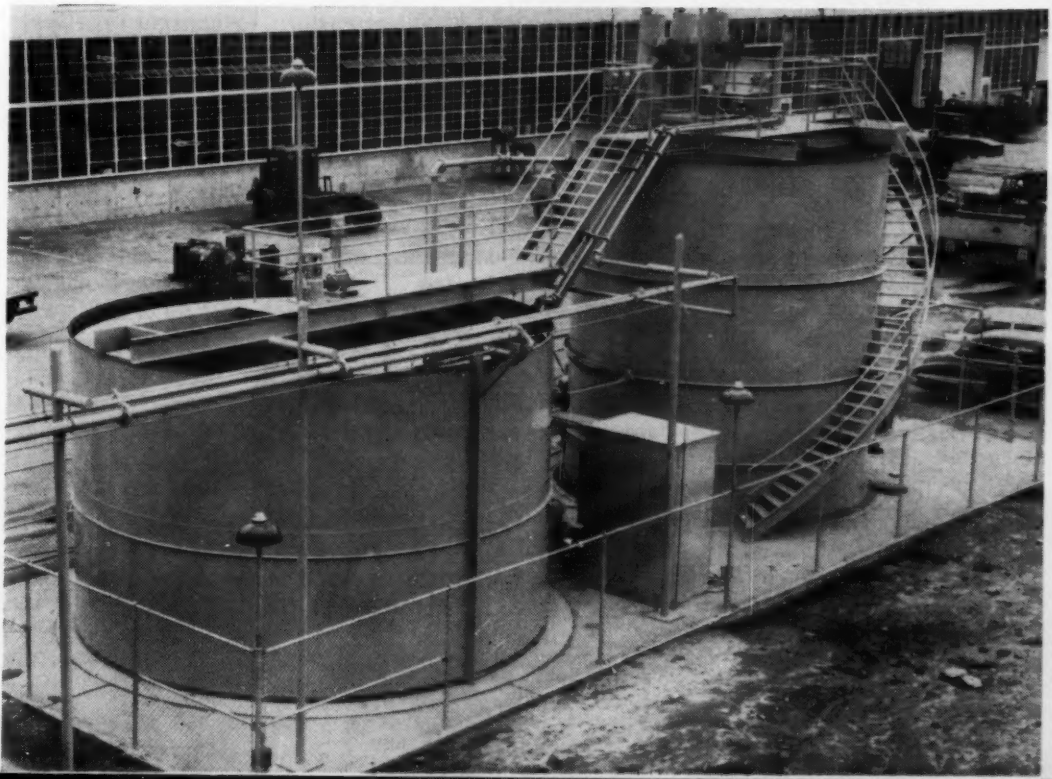


Fig. 1—Two views of a large outdoor waste treatment installation at a West Coast plant.

"The silver from silver-cyanide-containing rinse waters may be recovered."

passes through a cation exchanger and then a strong-base ion exchanger. The effluent from this process is deionized water.

Regeneration of the resins produces an effluent that consists of the original contaminants in a much more concentrated solution (as much as 20 times more concentrated). Disposal procedures for this solution are given after discussing reclamation. At this point ion exchange has merely served to reduce the volume of contaminants.

Reclaiming Plating Materials

When it is desirable to reclaim plating solutions, the rinse waters must be kept separate. Most rinse water waste contains one of the following contaminants: 1) chromium; 2) cyanide salts — silver, gold, and so on; 3) miscellaneous wastes such as alkaline cleaners and pickling acids.

Chromic Acid Recovery

To recover chromic acid from rinse water, pass the water through a cation exchanger and a strong-base anion exchanger.

Contaminants in the chromic acid rinse water such as copper, nickel and trivalent chrome are exchanged in the cation exchanger, while hexavalent chrome is exchanged in the anion exchanger.

When the cation exchange resin is exhausted, regenerate with acid and discharge the effluent to a collection pit for neutralization.

When the anion resin is exhausted, treat it with caustic soda to regenerate, and retain the effluent, which contains sodium chromate and some caustic soda. The latter mixture is converted to chromic acid by passing it through the cation exchanger.

In most cases it is advantageous to have an additional cation exchanger so that the two exchangers may be alternated between service and conversion.

Silver Recovery

The silver from silver-cyanide-containing rinse waters may be recovered by the following ion-exchange process.

Use a strongly acidic sulfonic cation exchange resin and a Type II strong-base anion exchange resin. Rinse waters containing sodium or potassium silver cyanide pass through these resins in series, at flow rates of four to five g.p.m. per square foot.

The cation exchanger converts the sodium cyanide to free hydrogen cyanide and retains the silver cyanide complex as a precipitate. The effluent from this exchanger contains only hydrogen cyanide.

The hydrogen cyanide passes through the Type II strongly basic anion exchanger, which exchanges the cyanide and discharges deionized water.

The system is designed so that the anion resin is exhausted first. The anion "break" can be detected by conductivity or pH measurements.

To regenerate the anion resin, pump eight pounds of 10 per cent sodium hydroxide per cubic foot of anion exchange resin downflow through the resin. The hydroxyl ion

replaces the cyanide ion, regenerating the resin.

The effluent from the anion regeneration contains sodium cyanide and sodium hydroxide.

Use this sodium cyanide-sodium hydroxide solution to regenerate the cation resin. Pass it downflow through the exhausted bed of cation resins.

The effluent from the cation regeneration contains sodium silver cyanide and sodium hydroxide. This solution can be used for makeup in the silver plating bath.

If the solution is not to be used directly for solution makeup, add 15 per cent sodium hypochlorite solution to precipitate the silver as silver chloride and destroy the cyanides. The supernatant liquid may now be dumped into the sewer, cyanide free.

After rinsing the exchange beds with water, regenerate the cation exchange resin with six pounds of 66-degree-baume sulfuric acid per cubic foot of resin (acid at five per cent concentration). Rinse once more and the exchange beds are again ready for service.

Precautions should be taken during the regeneration step to be sure that no acid contacts solutions containing cyanides, since toxic free cyanides would be evolved.

Approximate capacities of the two resins are as follows: four pounds of silver per cubic foot of cation-exchange resin; the equivalent of 10,000 grains of calcium carbonate per cubic foot of anion resin. Sodium silver cyanide can be recovered by this method for approximately 18 cents per pound of silver recovered.

Gold Recovery

In a gold plating line, any flowing rinses result in loss of gold by drag-out. Usually these flowing rinses contain enough gold to make recovery economical.

The rinse waters contain sodium or potassium gold cyanide. The gold is present as the monovalent anion gold cyanide.

Recover gold by passing the rinse water through a Type II strong base anion exchanger in the hydroxide form. This anion exchanger retains the gold.

After exhausting the resin, recover the gold by burning the resin. The residue is metallic gold. One cubic foot of anion exchange resin exhausted with gold cyanide contains approximately $4,000.00 worth of gold.

Platinum Recovery

Rinse water from platinum plating contains chloroplatinic acid. The chloroplatinic anion is strongly

"It boils down to this — you'd better train someone to take your place."

"Chemical cost for the process is 20 cents per pound of nickel sulfate recovered."

held by a Type II strongly basic anion exchanger. It displaces chloride or hydroxyl ions from the resin. When the resin is saturated with platinum the most convenient method of recovery is to burn the resin.

Nickel Recovery

Recover nickel from plating rinse waters by cation exchange. The cation exchange resin operates on the hydrogen cycle. Pass the effluent from the service cycle of the hydrogen exchanger through a weak base anion exchanger to obtain deionized water.

Regenerate the cation resin with sulfuric acid. The nickel is eluted from the resin as nickel sulfate. This regenerant effluent contains the residual sulfuric acid from the regeneration as well as the eluted nickel.

It is possible, by using a method of proportional regenerant recycling, to build up the concentration until the solution contains approximately 0.5 pound of nickel per gallon and only 0.2 pound of sulfuric acid per gallon.

This volume represents about five gallons per cubic foot of cation resin employed. The remaining acidity can be neutralized with nickel carbonate. Only 0.24 pounds of nickel carbonate per gallon of regenerant effluent collected are required for neutralization.

The cation resin used for this process has a capacity of five pounds of nickel per cubic foot (as nickel sulfate). Chemical cost for the process is 20 cents per pound of nickel sulfate recovered.

Oxidation-Reduction Treatment of Toxic Materials

To destroy toxic chemicals such as cyanides and chrome before discharge to the drain, oxidize the cyanides and reduce the chrome.

The equipment required to do this consists of two separate tanks: the first is an oxidation pit, where hypochlorite or chlorine gas is pumped in to oxidize the cyanides; the second is a reduction tank in which the chlorinated rinse water from the first tank is first acidified to a pH of 3.0 or less with sulfuric acid and then reduced with ferrous sulfate, sodium bisulfite, sulfur dioxide or other forms of sulfur dioxide.

The reductant added in the second tank reduces the metals (such as chrome) to a state in which they can be precipitated. Chrome, for instance, is reduced from hexavalent to trivalent. The trivalent chrome can be precipitated by an alkaline material such as lime.

If the precipitation is to take place in a continuous flowing system, a chemical coagulator is required.

The clear water from the coagulator is free of all toxic chemicals, allowing discharge to a sewer.

A sludge blanket is maintained at the desired level in the coagulator by periodic blowdown. The sludge, also free of dissolved toxic chemicals, may be discharged to a lagoon or similar basin.

The principal chemical reactions involved for this type of treatment are as follows:

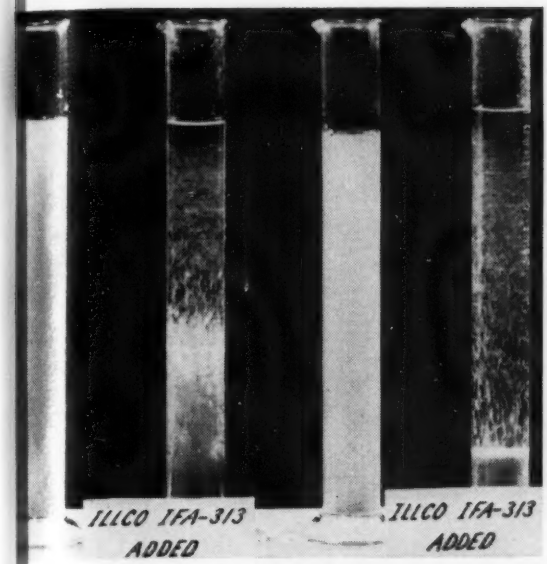


Fig. 2—Effect of IFA-313 polyelectrolyte on sludge produced by the reduction and precipitation of chrome. Cylinders on left have had 15 seconds settling time, while those on right have had 30 seconds settling time.

1. $2\ NaCN + 5\ NaOCl + H_2O \rightarrow 2\ NaHCO_3 + 5\ NaCl + N_2 \uparrow$
2. $Na_2Cr_2O_7 + H_2SO_4 \rightarrow H_2Cr_2O_7 + Na_2SO_4$
   $2\ NaHSO_3 + H_2SO_4 \rightarrow Na_2SO_4 + 2H_2SO_3$
   $H_2Cr_2O_7 + 3H_2SO_3 \rightarrow Cr_2(SO_4)_3 + 4H_2O$
3. $Cr_2(SO_4)_3 + 3Ca(OH)_2 \rightarrow 2Cr(OH)_3 + 3CaSO_4$

Polyelectrolytes

Since the introduction of polyelectrolyte flocculants a few years ago, there has been continuous investigation of their uses in waste treatment.

One polyelectrolyte, a product of Illinois Water Treatment Co., is named IFA-313. It increases the settling rate of suspended solids (Fig. 2) such as coagulator sludge, clay, and powdered carbon. An important application is in decreasing the settling time of carbon which has been added to a cyanide bath for organic removal. An addition of 10 p.p.m. IFA-313 decreases the settling time from 24 to 2 hours.

Plastic Valve

Throughout the investigation of these aforementioned processes great difficulties were experienced in valve performances. Illinois Water Treatment Co. developed an all-plastic valve (Fig. 3) having a built-in operator. The valve exhibits excellent operational performance on all types of chemicals tested.

—Adapted for publication in PRODUCTS FINISHING from a paper presented at the 13th Annual Purdue Industrial Waste Conference, Lafayette, Indiana.

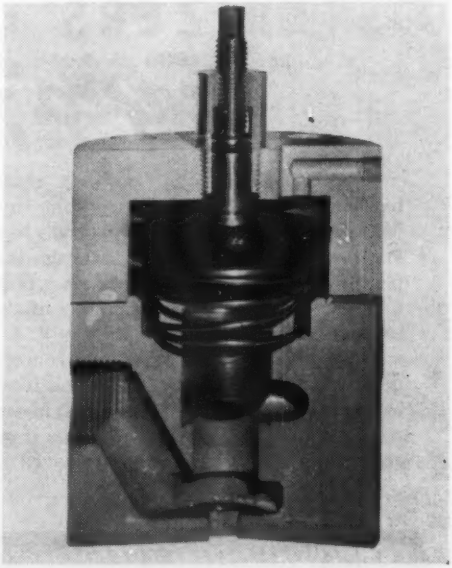
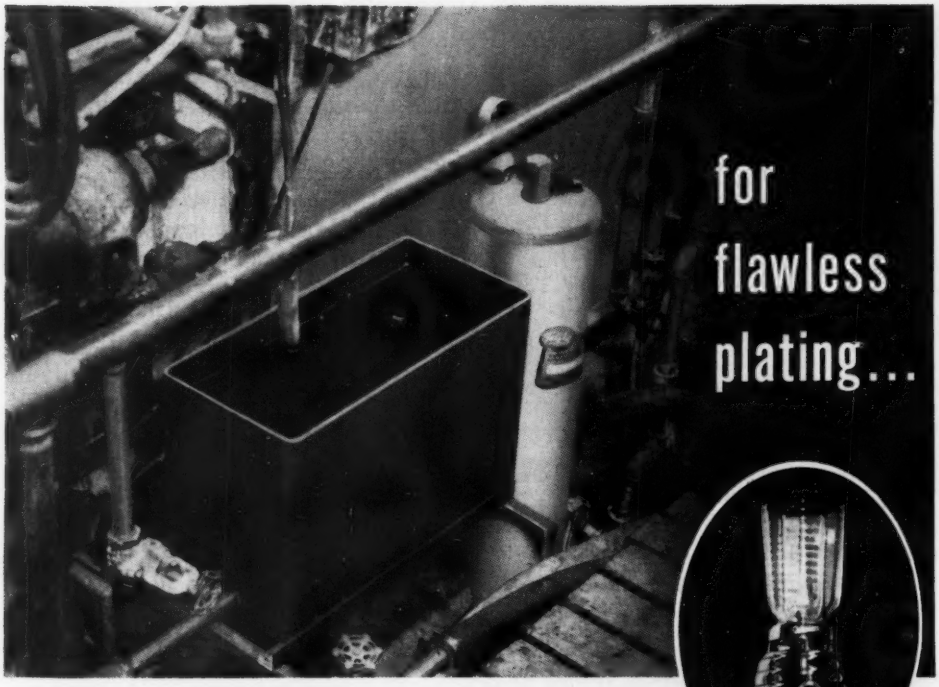


Fig. 3—Cutaway section shows construction of corrosion resistant all-plastic valve. (Photos courtesy Illinois Water Treatment Co.)



OSTERIZERS rely on *Fulflo Filters*

The plating quality of Osterizers, made by John W. Oster Manufacturing Company, Milwaukee, Wisconsin, is universally acknowledged. One way they insure flawless plating is to use Fulflo Filters on every tank to provide continuous micro-clarity of the solution.

Fulflo Filters offer a brand new concept of plating filtration — complete tank turnover up to three times per hour! This means complete solution filtration four times in an eight-hour day. Impurities are removed as fast as they're formed. Agitation is automatically increased.

You have a choice of rubber-lined or stainless steel containers for high *p*H solutions; plain steel for cyanide. Models, employing from 1 to 142 Honeycomb Filter Tubes, are compact and economical.

For booklet on "A New Concept of Plating Filtration", write to Department PF.

COMMERCIAL FILTERS CORPORATION
MELROSE 76, MASSACHUSETTS
PLANTS IN MELROSE, MASSACHUSETTS AND LEBANON, INDIANA

MICRO-CLARITY AT MINIMUM COST

Fulflo FILTERS — *with genuine Honeycomb Filter Tubes for controlled micro-clarity of industrial fluids.*

CFC FILTERS — *Selective filtration of oils • water-oil separators • magnetic separators • pre-coat filters • coolant clarifiers • automatic tubular conveyors.*

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2. **IMPINGEMENT** HONITE "C-R" Tumbling Shape will not nick or impinge surfaces or edges of work. It's *super-light* to produce superior micro-inch surface finishes, smooths off edges and radii in record time. Burrs are cut off before they can be peened over!
3. **FRACTURING** New HONITE Brand "C-R" Tumbling Shape *will not* fracture or fragment in the barrel. This virtually eliminates the annoying problem of lodging of media particles in pockets or threads of workpieces.

All this plus a cutting speed unsurpassed by any abrasive chip on the market today!

A truncated-triangular-pyramid designed to reach the most inaccessible workpiece areas.

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"C-R" TUMBLING SHAPE

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New Equipment, Materials, Processes

Polishing, Buffing, Degreasing, Cleaning, Barrel Finishing, Plating, Anodizing, Phosphatizing, Baking, Vacuum Metallizing, Chromate Coating, Paint Finishing, Waste Treatment

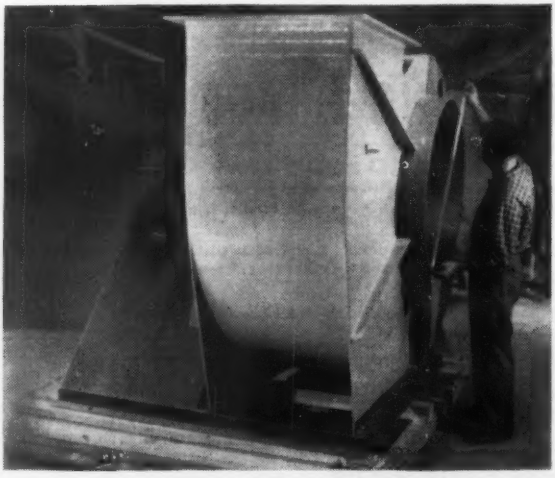
Plastic Fan

Description: Solid plastic is used for all parts exposed to corrosives in a large (27,500 c.f.m. capacity) fan recently introduced by Heil Process Equipment Corp.

This fan, known as the No. 36 Rigidon, is recommended for use in exhausting mixed acid fumes and other corrosives.

Manufacturer: Heil Process Equipment Corp., 12901 Elmwood Ave., Cleveland 11, Ohio.

For more data circle 1 on Reader Service Card

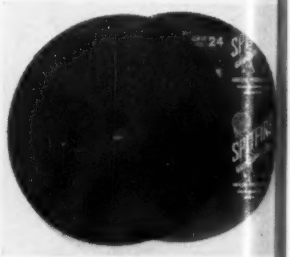


Solid Plastic Fan: handles 27,500 c.f.m.

Polishing Disc

An aluminum oxide polishing disc said to provide greater operating safety has been introduced by Abrasive Products, Inc.

Called the "Spitfire," the solvent and waterproof disc has reinforced edges and "shape control," which is said to eliminate limpness and disintegration caused by excessive grit loss.



Polishing Disc

Uses include metal sanding and polishing, weld blending and high-speed finishing.

Manufacturer: Abrasive Products, Inc., Pearl St., South Braintree 85, Massachusetts.

For more data circle 2 on Reader Service Card

★ ★ ★

Loose-Abrasive Finishing Equipment

Techline Division of Wheelabrator Corporation has announced a line of vertical-spindle machines for finishing parts which cannot be processed in conventional tumbling equipment.

Techline spindle-type machines with 4, 8 and 16 spindles and power drives of 5 to 30 h.p. are available.

Manufacturer: Techline Division of Wheelabrator Corporation, 2454 Avenue V, Vicksburg, Michigan.

For more data circle **3** on Reader Service Card

★ ★ ★

Vacuum Metallizing Unit

Description: Rapid pumping cycles (on the order of a minute and a half) are possible with a production coating unit that has 16-inch high-vacuum valves. The entire volume and surface area of the valves are never exposed to the atmosphere. This results in no pumping or outgassing time for this substantial volume and area. It also provides a large high-vacuum ballast volume.

This valve design permits cleaning the interior of the unit through the handhole with a caustic spray. Caustic fumes are vented outdoors.

The vacuum cycle is semi-automatically controlled by a switch that operates fail-safe pneumatic vacuum valves. This reduces the possibility of operator error in valve sequence.

Manufacturer: Vacuum Specialties Company, Inc., Somerville, Mass.

For more data circle **4** on Reader Service Card

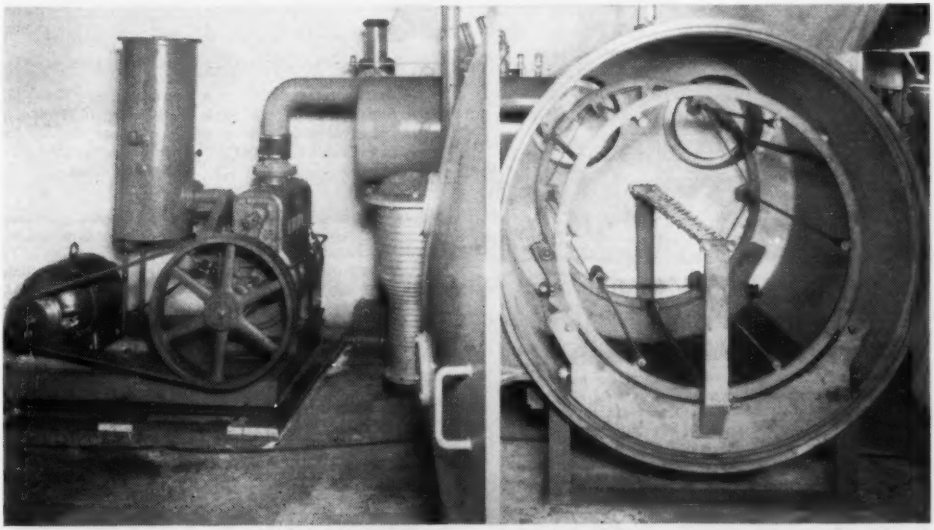
★ ★ ★

"Packaged" Waste-Disposal Unit

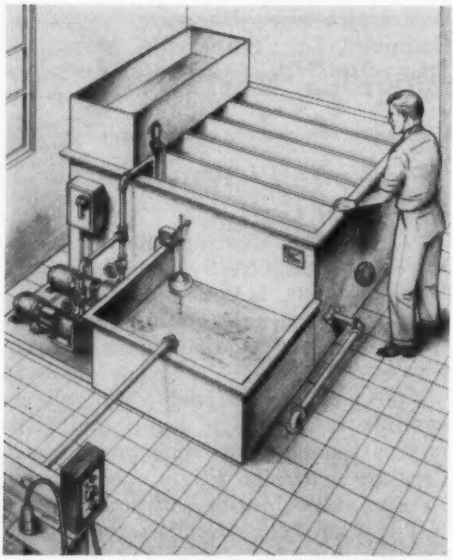
A unit for treating plating room wastes, introduced by the George L. Nankervis Co., is built as a "package" unit, includes tanks, pumps and controls necessary to neutralize cyanide wastes.

The Cyanizer Model 5769 collects cyanide wastes in a sump and then pumps them into a baffle tank, where they are neutralized by a concentrated sodium hypochlorite solution.

The baffle tank retains the wastes for treatment for a period of one hour while the sodium hypochlorite is automatically metered into the solution in amounts needed to obtain complete neutralization. The entire process is



Vacuum Metallizer: rapid pumping cycles, little pumping or outgassing time for valves.



Nankervis Cyanizer: packaged waste treatment

automatic and continuous, it is stated.

Discharge from the Cyanizer is completely neutralized and can be safely dumped into municipal sewer systems.

Manufacturer: George L. Nankervis Co., 15300 Fullerton Ave., Detroit 27, Michigan.

For more data circle **5** on Reader Service Card

★ ★ ★

Cold Stripper

A high-speed stripper called Coldstrip No. 900 removes enamels, lacquers, and resin-base coatings such as the epoxies, vinyls and acrylics, at room temperature.

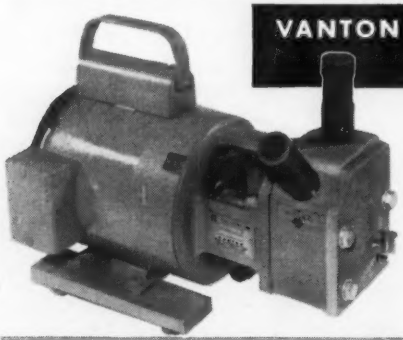
Manufacturer: The Lea Manufacturing Co., Waterbury 20, Conn.

For more data circle **6** on Reader Service Card

★ ★ ★

Cadmium Coating Process

A method for vacuum deposition of cadmium makes it possible to protect high-tensile steels against corrosion without danger of hydrogen embrittlement, according to NRC Equipment



VANTON SEALLESS PLASTIC PUMP RESISTS $FeCl_3$, PLATING CORROSIVES

Eliminates leakage, scoring, corrosion, maintenance problems, features:

- No stuffing boxes
- No shaft seals
- No valves or gaskets
- No metal parts in contact with fluid
- Non-agitating
- Self-Priming; high-vacuum
- Flexible liner absorbs abrasive action of suspended solids
- Non-contaminating

Now at last comes a pump designed to give you complete protection against leakage, corrosion, contamination, abrasion, maintenance problems.

Operating on a radically new design principle, which eliminates stuffing boxes and shaft seals, the Vanton pump is a low-cost, versatile, simple yet carefully engineered unit, problem-free with minimum maintenance. *Construction materials* include PVC, high-temperature polyethylene, Teflon (DuPont), Buna N, bakelite, or stainless steel, in capacities from ¼ to 40 GPM.

What's Your Fluid Handling Problem? Vanton's Technical Service Can Help You Solve It!

Mr. Carl Tylka, Director Cooper Alloy Technical Service Dept.

Whatever your pumping, valving, or piping problem—equipment specification, construction material, circuit design and layout—Vanton's fully competent, experienced Technical Service staff can be of help to you.

Headed by Mr. Carl Tylka, this new Cooper Alloy service has been set up to assist industry in solution of fluid handling equipment, design, and operational problems. It typifies Cooper Alloy's forward-looking approach to cooperation between user and supplier.

To set the ball rolling, just write to Carl Tylka, Technical Service Director—and you'll get action!

Write for your free 8-page Vanton Catalog! It gives the whole Vanton story!

Also available: *Flex-Plug Plastic Gate Valve.* Combines gate valve's full flow with globe valve's throttle control. Write for Flex-Plug valve folder.

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K & B OVENS!

Kirk & Blum Oven installation in the plant of a leading manufacturer of Plastisol coatings. Oven measures 12′ x 12′ x 12′ and is used for both experimental and production operations.

Kirk & Blum Ovens are popular throughout the Plastisol industry where uniform temperatures are required. The oven illustrated is operated at temperature ranges up to 600° F. with temperature variations throughout the oven of less than 5° F.

The oven is used to determine experimentally curing and baking temperatures, as well as for batch production of very large items.

Whatever your oven needs consult Kirk & Blum. Write for new "Ovens for Industry" catalog. The Kirk & Blum Mfg. Co., 3116 Forrer St., Cincinnati 9, Ohio.

KIRK & BLUM

OVENS FOR INDUSTRY

For more data circle 343 on Postpaid Card

Corporation and its parent, National Research Corporation.

The method produces high-quality coatings, it is stated. Samples, some of which had been flexed repeatedly, have successfully passed 96-hour salt spray and salt bath tests without trace of corrosion. In one bend test, the substrate failed before the coating.

The process is expected to find immediate application in the aircraft industry, for use on parts made of high heat-treat steels. Such parts include landing gear structures, control components, threaded fasteners and other highly stressed elements.

NRC also expects the process to find applications in producing automotive products, industrial machinery and a variety of other equipment.

The cadmium plating process is related in principle to the well-known vacuum metallizing method now used to decorate plastics, die castings and metal stampings. It differs from this technique not only in the metal being vaporized but also in the thickness and crystalline structure of the coating.

While a thin flash film of aluminum is adequate for decoration, it is too thin to stand up to hard usage unless protected by a lacquer top coat. The thickness of the cadmium coating is on the order of 100 times as great — up to 0.001 inch — more if required. Also, while the decorative coating appears optically opaque, it contains microscopic passages through

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Two of the four Sel-Rex Jet Platers —complete electroplating facilities in 34" x 28" x 33" cabinets. This equipment is used as a step in the process of producing some of the printed wiring boards for the SAGE computer, and for experimental equipment currently under development.

IBM Plating operator removes printed wiring board from Sel-Rex Jet Plater where it has been plated with Sel-Rex Bright Gold. The Jet Platers assure optimum conditions for the electrodeposition of Sel-Rex Bright Gold for this exacting application.

Heart of the SAGE System is the 275 ton IBM computer, one of the world's largest and most reliable. Shown here are some of the computer frames containing pluggable electronic units that perform the data processing involved in solving air defense problems.

SEL-REX BRIGHT GOLD AND 4 JET PLATERS HELP PROVIDE "BUILT-IN" RELIABILITY TO IBM SAGE COMPUTER

When it comes to protecting our country from possible surprise air-attack, only the best, most reliable instruments and equipment will do. Understandably, IBM was chosen to build the 275 ton computer pictured in part at the lower left, which is the heart of our SAGE System. The SAGE computer performs millions of computations at lightning speed, and continuously checks them—*automatically*.

Approximately 7,300 pluggable units containing printed card assemblies are used in this computer. Needless to state, the proper functioning of these units is essential. Sel-Rex Bright Gold, in four Jet Platers, is used in the manufacture of the IBM SAGE computer, and other military equipment under development. Built-in reliability—for which IBM equipment is famous the world over—assures us all of constant electronic watchfulness 24 hours a day.

Sel-Rex can offer built-in reliability to your product through the unique metallurgical properties of a precious metal—or by designing plating or metal finishing equipment to your specific requirements... from a single piece of equipment to a complete facility. Our latest catalog—#CHP—gives details.

Sel-Rex®

SEL-REX CORPORATION

NUTLEY 10, NEW JERSEY

Manufacturers of Exclusive Precious Metals Processes, Metallic Power Rectifiers, Airborne Power Equipment, Liquid Clarification Filters, Metal Finishing Equipment and Supplies

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which corrosive materials can attack the substrate. In the cadmium process, special techniques are used to produce a hole-free homogeneous coating, which will be an effective barrier.

Equipment requirements are met by a modified version of one of the standard decorative metallizers.

Developer: NRC Equipment Corporation, 160 Charlemont St., Newton, Mass.

For more data circle **7** on Reader Service Card

★ ★ ★

Removable Plastic Coatings

Removable plastic coatings made by Guard Coatings Corporation for temporary protection of highly finished surfaces are furnished as liquid plastic solutions. These are applied to the highly finished surface by conventional coating techniques. When dry, they form tough, abrasion-resistant films.

Two general classes of coatings are available: fast-drying solvent solutions and water dispersions.

Coatings are removed by one of four methods, depending upon the product used: peeling by hand, dissolving in a vapor degreaser, dissolving in mild alkali solution and wetting the film with water.

The product to be used is determined by the degree and type of protection required, the surface to be protected, and the manufacturing operations to which the protected surface is subjected.

Some of these coatings can be

IT'S EASY TO
STRIP
OFF PAINT
and Solve Your Stripping Problems with—
EPOXYSTRIP

PAINT STRIPPER—Saves Time and Money!

A new more powerful paint stripper that outstrips all others! No organic finishes have yet resisted this amazing paint stripper. It was especially formulated to remove epoxies . . . with the same ease that it removes baked enamels, lacquers, etc. No stripping scum—clean rinsing!

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- ECONOMICAL—MORE JOBS PER GALLON AT LOWER COST
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left on the fabricated object as a form of protective packaging, or may be used exclusively for packaging purposes.

Manufacturer: Guard Coatings Corp., Dept. K-1, 8-05 43rd Ave., Long Island City 1, N. Y.

For more data circle **8** on Reader Service Card

★ ★ ★

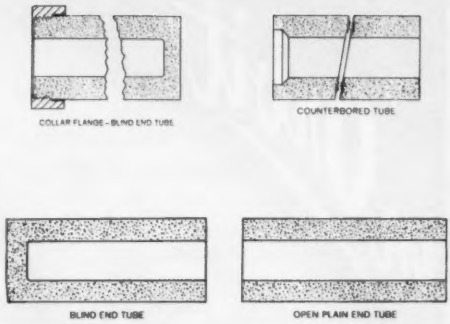
Porous Carbon Filter Tubes

Description: Porous carbon filter tubes available from National Carbon Co., Division of Union Carbide Corp., include a wide variety of styles for any type of tube filtering equipment. Supplied with any desired internal or external machining.

Typical configurations of porous carbon filter tubes include plain open-end tube, blind-end tube, counterbored tube, and blind-end tube with a collar flange.

Manufacturer: National Carbon Co., 30 E. 42nd St., New York 17, New York.

For more data circle **9** on Reader Service Card

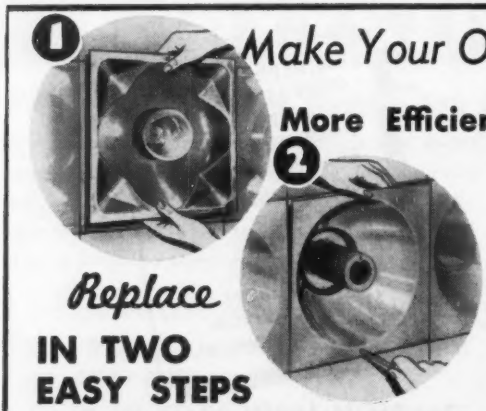


Typical Designs: porous carbon filters

★ ★ ★

Cleaner, Phosphatizer

Cowles Chemical Company recently introduced Ty-Bond R-1, which cleans metal and produces an amorphous iron phosphate coating on ferrous metals, zinc and cadmium.



Make Your Old **BULB-TYPE OVEN**

More Efficient by Installing

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F. R. Assemblies

Replace

IN TWO EASY STEPS

TEMPERATURE CONTROL, ALSO

With the change-over you can enjoy accurate control; from 0% to 100% of rated capacity. Write for literature giving complete data.

You can free yourself from the expense of replacement of burned-out infra-red bulbs by installing dri-Quik F. R. Assemblies. These units fit into your present oven and enable you to save most of the cost of a new oven. Take advantage of greater efficiency of driQuik ceramic-type generators.

driQuik DIVISION

DRY CLIME LAMP CORP.
GREENSBURG, INDIANA

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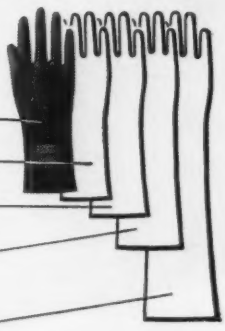
These Stanzoil® Milled Neoprene Gloves

. . . Guarantee Positive Liquidproof Protection in 103 Basic Oils, Acids, Caustics, Greases, Solvents

Black All Neoprene Stanzoils With Non-slip Grip

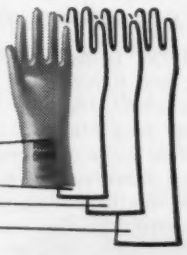
Model	Weight	Fingers	Length
N-31	Light	Straight	10½"
N-35	Light	Curved	10½"
N-32	Medium	Straight	11"
N-36	Medium	Curved	11"
N-41	Heavy	Straight	12"
N-44	Heavy	Curved	12"
N-51	Heavy	Straight	14"
N-33	Light	Straight	14"
N-54	Heavy	Curved	14"
N-71	Heavy	Straight	18"
N-73	Light	Straight	18"
N-74	Heavy	Curved	18"



White All Neoprene Stanzoils With Smooth Finish

Model	Weight	Fingers	Length
N-30	Light	Curved*	10½"
NW-31	Light	Straight	10½"
NW-32	Medium	Straight	11"
NW-41	Heavy	Straight	12"
NW-51	Heavy	Straight	14"

*Non-slip



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Please send me:

- ☐ 1958-59 Pioneer Industrial Glove Catalog
- ☐ 17"x 22" Full Line Glove Wall Chart
- ☐ Job Description Form For Free Hand Protection Analysis

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City _____ Zone _____ State _____

Requested by _____

For more data circle 349 on Postpaid Card

Ty-Bond R-1 produces coating weights up to 60 milligrams per square foot, provides a base for paint adhesion and improves corrosion resistance. A special rinse is available for sealing the coating, when required.

The Ty-Bond R-1 process is recommended for removing light oils and shop dirt from fabricated metal parts while at the same time applying an iron phosphate coating.

Manufacturer: Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

For more data circle 10 on Reader Service Card

★ ★ ★

Copper Cyanides

True double salts of sodium and potassium copper cyanides supplied as dry powders have been introduced by True Brite Chemical Products Co.

Since the powders are made by drying solutions that have been filtered, clear solutions are produced by redissolving the powders, and no filtration is necessary prior to adding these materials to a plating bath. These concentrates add copper to brass, bronze and copper plating solutions without materially changing the cyanide content; thus additions may be made without the careful weighing necessary to add separate materials.

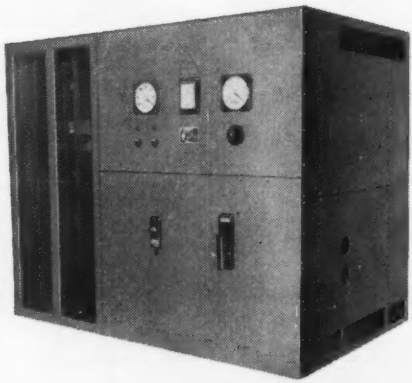
Specifications for the sodium copper cyanide: copper, 28.5 to 30.0 per cent; free sodium cyanide, 0.7 to 2.7 per cent; pH of solution, 12.5 to 13.2.

Specifications for the potassium copper cyanide; copper,

SYNTRON

SELENIUM or SILICON

RECTIFIER POWER UNITS



provide efficient, dependable, low cost d-c power supplies for better, more profitable metal finishing

SYNTRON Selenium or Silicon Rectifier Power Units meet metal plating and finishing d-c power requirements—1 KW up, at any d-c voltage output. The high efficiency, excellent power factor, over load capacity, long life and low maintenance make SYNTRON Rectifier Units ideal a-c to d-c power conversion units for the metal plating and finishing industry. They provide efficient, dependable d-c power supplies for electro plating, cleaning, polishing and electro chemical processing.

SYNTRON Selenium or Silicon Rectifier Power Units are efficient and dependable—easy to install— easy to maintain.

SYNTRON Engineers welcome all special applications in all sizes of rectification.

Write for free literature

SYNTRON COMPANY

452 Lexington Avenue Homer City, Penna.

For more data circle 350 on Postpaid Card

Which is the best way to tumble finish your parts?

That depends on the size of your part, its shape and how intricate its design. You must allow for the type of metal and whether the part has been stamped, cast or machined. The surface desired is another consideration. To make sure of the best way talk to a Grav-i-Flo engineer. No one in the tumbling business has more experience nor has acquired more knowledge.

METAL PARTS can be deburred and finished more economically than ever with Grav-i-Flo's new 8c a lb. limestone and granite chips.

METAL REMOVAL or fine finish, uniformity and duplication to close tolerances—all are achieved successfully with Grav-i-Flo natural and synthetic chips, highly developed compounds.

AUTOMATION of large quantity lots is accomplished with new automatic machines and accessories, such as chip separator and grader, hoist pans, etc.

PARTS not suited to tumbling and previously finished only by buffing, are now finished to high lustre surfaces with Grav-i-Flo's new Spin-Finish machine.

These and all other variables of mechanical finishing make good reasons for calling Grav-i-Flo engineers for the answers to the *Best Way!*

GRAV-I-FLO CORPORATION • DEPT. PF3 • STURGIS, MICHIGAN

GRAV-I-FLO PERSONNEL WERE THE PIONEERS — AND ARE *STILL* THE LEADERS IN TUMBLE FINISHING.

TUMBLE GRAV-I-FLO FINISH

For more data circle 351 on Postpaid Card

27.0 to 28.9 per cent; free potassium cyanide, 0.7 to 3.0 per cent; pH of solution, 12.5 to 13.2.

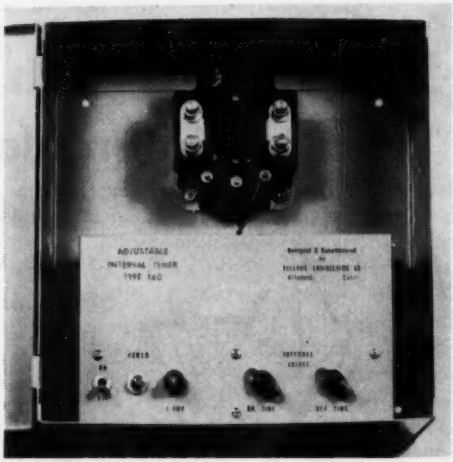
Manufacturer: True Brite Chemical Products Co., Box 31, Oakville, Conn.
For more data circle 11 on Reader Service Card

★ ★ ★

Current Interrupter

A current interrupter recently introduced by Fellows Engineering Co. is useful in plating and alkaline descaling operations.

The assembly consists of a single-pole single-throw magnetic contactor (of suitable current-carrying capacity for the application involved) and an automatic interval timer. Magnetic contactor is available in the following capacities: 100, 300, 600, 1000, 1500 and 2000 amperes, 12 volts d.c. or less. Timing unit operates on 115 volts 60 cycles.



Fellows Engineering Current Interrupter

The recycling timer provides variable "on" and "off" time intervals

Electro-polishing

Concentrates for

Aluminum and Alloys
Copper and Alloys
Carbon Steels
Stainless Steels
Plus Custom Concentrates for other metals

for fast, low cost

Burr Removal
Size Control
Corrosion Resistance
Micro-Inch Improvement
Electro Machining
Electroplate Adhesion

Electro-Glo

Electro-Glo produces finishes from satin to mirror-bright. We'll be glad to process your sample. Electro-glo offers nation-wide service and delivery in carboys, drums and tank trucks.

Electro-Glo Company, 621 South Kolmar Ave., Chicago 24, Ill.

For more data circle 352 on Postpaid Card

easy way to clean hardware

Cincinnati

...separates media

...washes

...rinses

...dries

automatically!

Labor and time savings are a big feature of this CINCINNATI drum-type Cleaning Machine installed in the hardware division of a big-3 automobile manufacturer. Space-saving design washes both parts and media from previous tumbling and burnishing operations, then separates media automatically.

Got a new *or* old cleaning or finishing problem? CINCINNATI engineers consistently prove time savings up to 75%, labor savings up to 81%, production increases of 120% and more! Write for details.

CINCINNATI CLEANING and FINISHING MACHINERY COMPANY
2008 Hageman St.,
Cincinnati 41, Ohio

For more data circle 353 on Postpaid Card

which are independently adjustable over the range specified. Any timer interval between 1 and 180 seconds can be provided.

Manufacturer: Fellows Engineering Co., 1168 Meadowbrook Rd., Altadena, Calif.

For more data circle 12 on Reader Service Card

Fast-Dry Finish

A short-oil alkyd, Cellolyn 604, makes possible formulation of Parlon chlorinated-rubber-based finishes for use on metal products, according to an announcement from Hercules Powder Co. The Parlon finishes are fast-drying and durable, Hercules states.

Widely used in formulation of traffic paints and other specialized finishes, Parlon has not been used for metal paints because only the slow-drying long-oil and medium-oil alkyds could be used in Parlon formulations.

Product finishes containing specified amounts of Cellolyn 604 and Parlon dry tack-free in 30 minutes. Such finishes have increased hardness and mar resistance, good resistance to humidity, alkalies and acids, good abrasion resistance, and are easily cleaned.

Manufacturer: Hercules Powder Co., Wilmington 99, Delaware.

For more data circle 13 on Reader Service Card

★ ★ ★

Rinse Aid

A rinse agent recently introduced by Hanson-Van Winkle-Munning Co. reduces surface tension of hot

????????????????????????????????????

DO YOU OWN

Cro-Plate

WET BLAST EQUIPMENT?

As successors to the Cro-Plate Company, Inc. the former manufacturers of Pressure Blast wet blasting equipment, we can meet all your maintenance and service requirements. Spare parts and abrasives are immediately available from stock.

Send today for your copies of our new revised parts list, instruction manual, abrasive price schedule and the name of the Authorized Pressure Blast Distributor nearest you.

PRESSURE BLAST MFG. CO., INC.

33 PLEASANT ST. MANCHESTER, CONN.

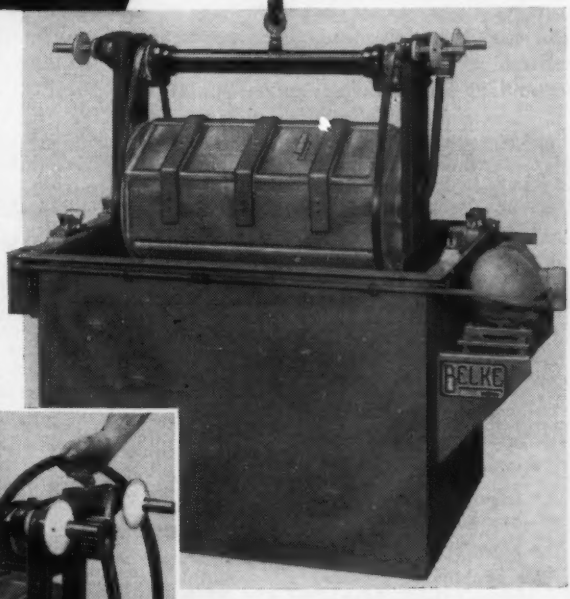
For more data circle 354 on Postpaid Card

The New BELKE
beautiful & economical
Plating Barrels
for 1959

Completely submerged cylinder operation

Low level superstructure — added clearance for safe transfer of cylinders

One piece ¾" diameter copper cathode cable with heavy rubber insulation

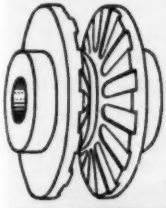


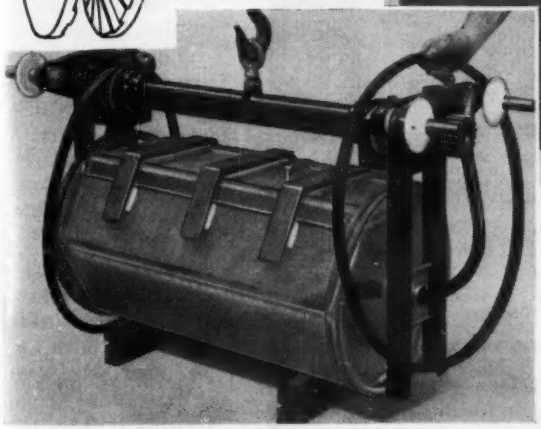
New hanger design of amazing simplicity and beauty

Completely covered with black pastisol. Can be washed clear and clean with a hose in seconds.

Non-skid V-Belt Pulley

Spiral V-Belt Pulley has non-skid cleats that grip plain V-Belt and create tremendous traction. This new non-skid pulley eliminates all need for extra costly and short-lived notched belts—has greater traction and gives many times longer belt life with standard type belts





INSTANT BELT and CYLINDER CHANGE

Lower cylinder on blocks. Lift off belt—put on belt. Lift out cylinder—put in cylinder.—bing, bang done—tool time, zero.

Available with Double Oscillating Cylinders

The 1959 Plating Barrels can be furnished with hanger mounted motor drive.

Heavy duty, long life and low upkeep construction

- Long life, thick wall Teflon bearings
- Hanger guides covered with hard sheet rubber
- One piece hanger bridge completely plastisol coated
- Solid copper saddle-horns with heavy solid copper bar connection to cathode cable
- Uses plain (not notched) V-BELTS—Automotive or industrial V-BELTS can be used, but standard type belts designed to meet the unusual service conditions are recommended

Conventional cylinders are available in Plexiglas, Melamine, Bakelite, Transite, Tempron Hard Rubber. BELKE Double Oscillating Cylinders are available made of Plexiglas.

Whatever your requirements for plating room equipment, send specifications or write.

Belke Manufacturing Company
947 N. Cicero Ave., Chicago 51
EVERYTHING FOR PLATING PLANTS

For more data circle 355 on Postpaid Card

water in rinse tanks. Lower surface tension promotes drainage and lessens staining of the work.

Called Rinsoff, the product is a combination of surface active agents and solvents. Two to eight ounces of this material are added to each 100 gallons of rinse water, concentration depending upon hardness of the water and amount of dirt present in the tank.

Manufacturer: Hanson-Van Winkle-Munning Co., Matawan, N. J.

For more data circle 14 on Reader Service Card

★ ★ ★

Water-Wash Compounds

A series of compounds for use in water curtains of water-wash spray booths includes four different compounds, each of which is formulated for flocculating specific types of paint. "Skim - Off" compounds combine with the paint particles to form tiny droplets, which float on the surface of the tank. These particles are easily skimmed off. All compounds are formulated to inhibit foaming.

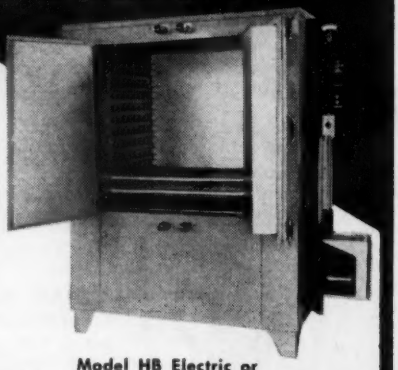
The compounds are furnished as powders, which are dissolved in the spray booth water. Control is by measurement of pH or by titration.

Specific compounds available include Skim-Off 382, for use with epoxy finishes; Skim-Off 383, for use with heavy-pigment primers, including gilsonite-base coatings; Skim-Off 384, for use with acrylics, polyurethanes, polyamids and similar coatings; and Skim-

Precise engineering and construction result in

UNIFORM HEAT

throughout the work space



- High velocity recirculating blowers
- Greater heat input
- Adjustable louvres for balanced airflow
- Superior heat seals

All combine to provide *excellent temperature uniformity* in these rugged cabinet ovens.

Model HB Electric or Gas Cabinet Oven

30 Standard Models

- Work space from 4.6 to 72.3 cubic feet
- Temperature ranges from 100 to 1250° F.
- Electronic combustion devices insure safety for gas fired models
- Indicating control instrument
- Factory tested

Other ovens from $110.50 up, including a complete line of laboratory, bench, cabinet, walk-in, and custom-built units.

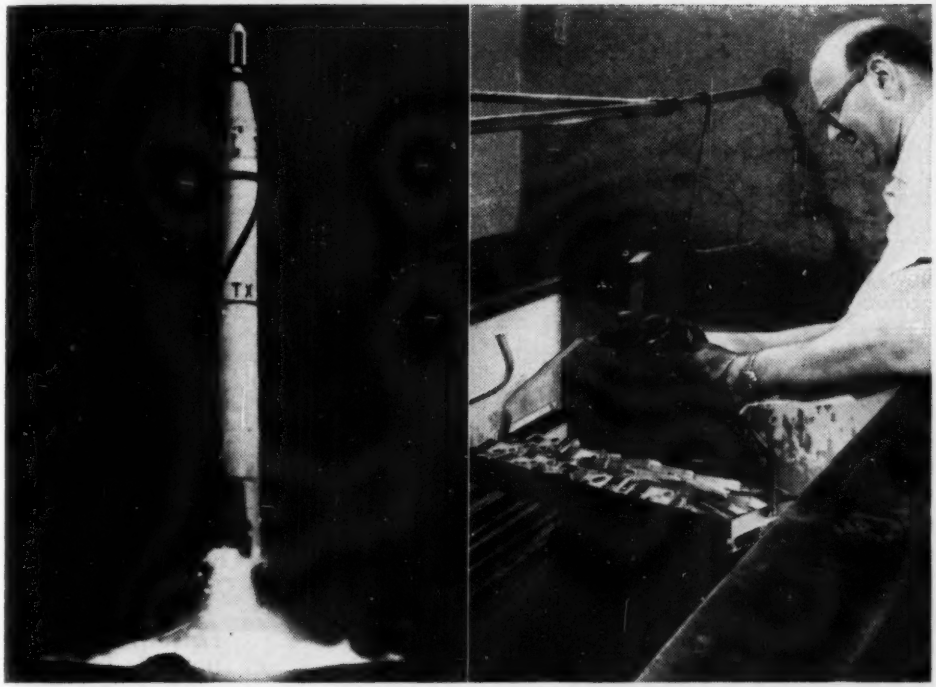
Write for literature to help you select the right oven for your application

Specialists in Heat Process Equipment

GRIEVE-HENDRY CO.

1414 W. CARROLL AVE. CHICAGO 7, ILLINOIS

For more data circle 356 on Postpaid Card



ONE SOLVENT—TWO JOBS

Now you can use one grade of trichlor for both...Nialk trichlor with **psp**

Now you take trichlor for missile flushing and vapor degreasing out of the same drum.

The *metal degreasing* grade of Nialk® trichlorethylene meets industrial specs for flushing missile and rocket components. Its residue count is a low 0.0005%. It meets impact sensitivity requirements.

Save storage space. You can cut inventory to the bone with this single grade of trichlor. The savings in time and money are obvious.

Eliminate mistakes. There's no chance of picking the wrong drum to do a job when you stock just one grade for all work.

No disposal problems. Take the same trichlor you use for flushing and you can use it in your vapor degreaser without distilling.

Get psp too. Get the extra advantages of **psp**—**p**ermanent **s**taying **p**ower—in your trichlor.

Send for bulletin. Data Sheet 814 should answer any questions you have about Nialk trichlor. Write for a copy.

HOOKER CHEMICAL CORPORATION
1403 UNION STREET, NIAGARA FALLS, NEW YORK

Sales Offices: Chicago, Detroit, Los Angeles, New York, Niagara Falls, Philadelphia, Tacoma, Worcester, Mass.

In Canada: Hooker Chemicals Ltd., North Vancouver, B.C.

HOOKER CHEMICALS PLASTICS

For more data circle 357 on Postpaid Card

Off 385, for use with phenolics, alkyds, ureas and other oil-base finishes.

Samples and literature on these products are available from the manufacturer.

Manufacturer: Octagon Process, Inc., 15 Bank St., Staten Island 1, New York.

For more data circle 15 on Reader Service Card

Barrel Finishing Media

A line of barrel finishing media and supplies available from BMT Manufacturing Corp. includes compounds, media and machinery for use in many applications. Some of the items now available from the company are listed below:

Multi-Forms, a media made in standardized sizes and shapes, including triangles and cylinders of several sizes. This media is made of aluminum oxide, silicon carbide, porcelain and other materials, in various grit sizes.

Multi-Stars, a die-cast media, is useful in finishing intricate castings with odd-shaped holes and recesses.

BMT barrel finishing compounds include neutral, for use with all media in both cutting and burnishing; alkaline, for long, heavy runs of ferrous metals; and acid, for heavy scale and rust removal. Aluminum oxide and silicon carbide loose abrasive grain for use with the compounds is also available.

Special media stocked by the company include aluminum oxide, granite and limestone nuggets; walnut shells, cob meal, wood chips, steel balls and

FORMAX

ZIPPO
SISAL BUFFS

A Dual-Purpose
Polishing and Buffing Wheel!

Call for Zippo Sisal Buffs when you have need for a fast cutting, heavy duty wheel to remove surface imperfections from ferrous metals. You will find they serve excellently to blend and smooth stretcher strains, orange peel, light die marks and polishing wheel grit lines. And—at the same time leave a bright surface finish.

Write for Descriptive Literature

FORMAX MFG. CORP.
DETROIT 7, MICHIGAN
"THE FOUR McALEERS"

For more data circle 358 on Postpaid Card

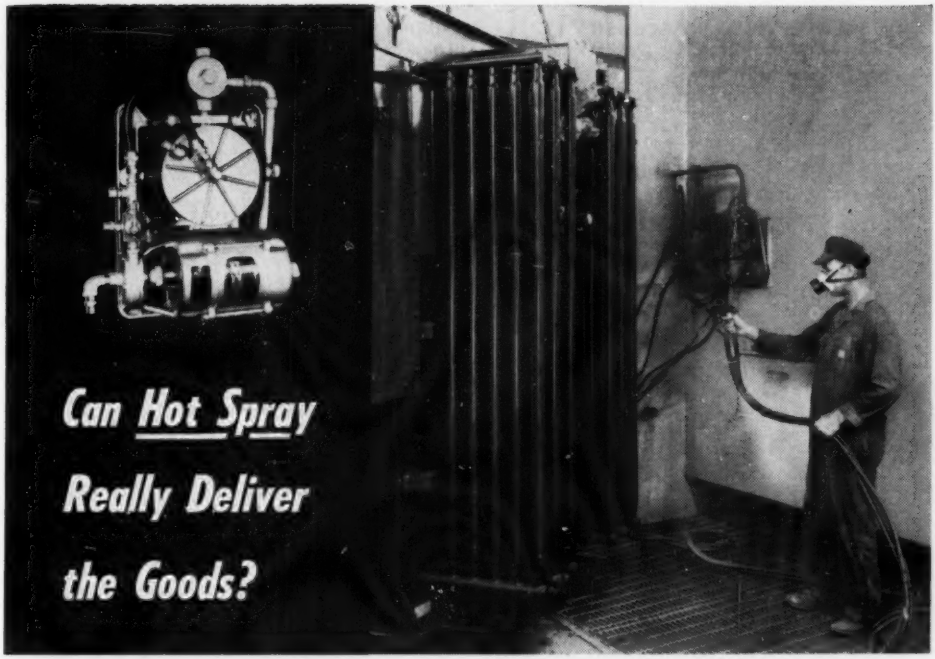


Photo: Courtesy General Electric Co.

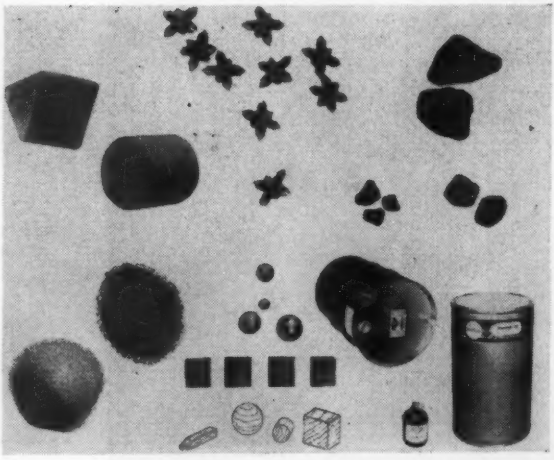
Emphatically, YES! But only if you have a full range of temperature control as furnished by Spee-Flo Hot Spray units. This temperature control, instantly and externally adjustable throughout the entire usable range, guarantees the full advantages of the hot spray process — maximum solvent evaporation, uniform viscosity, better build, lower spraying pressures, 25–40% material savings. Don't judge full hot spray results by earlier "paint warmer" systems. Arrange for an on-the-job demonstration of Spee-Flo Hot Spray equipment. You be the judge! There's no obligation, of course.

Write for free booklet "Why Hot Spray?"

THE **SPEE-FLO** COMPANY

6614 HARRISBURG • HOUSTON 11, TEXAS

For more data circle 359 on Postpaid Card



BMT Multi-Forms (upper left); Multi-Stars (center); nuggets (upper right); abrasive grain (lower left); special media (center) and burnishing compounds (lower right).

various other types of specialized media.

The company's Multi-Barrel Slide-Honing machines are useful in performing all barrel finishing operations, including removal of burrs, flash, tool marks, rust and scale.

Manufacturer: BMT Manufacturing Corp., E. 9th St., Elmira Heights, N. Y.

For more data circle **16** on Reader Service Card

★ ★ ★

Corrosion-Test Chamber

A test cabinet with interior dimensions 96 by 48 by 48 inches deep is useful in corrosion testing of large parts such as bumpers, steering assemblies, engines, other large assemblies.

The big cabinet is available in stainless steel or mild steel, is epoxy lined, has plastic window to allow the technician to observe the test in progress.

Heat is supplied to the test chamber by water jackets on all four sides and the bottom of the test chamber. Will produce temperatures up to 150 deg.

Collect Dirt-Don't Spread It Around

The Dust-All TACK RAG collects dust, dirt and lint from surfaces before painting and fine finishing. Stays soft and tacky indefinitely. Leaves no surface film or residue. Non-combustible.

Made in 18"x36" size folded to 4½"x6", bulk packed or in individual glassine bags, also available in rolls to your specified yardage. Your selection of various weaves of cloth and amount of tack from very light to extra heavy.

MARD PRODUCTS, INC.

1020 E. TEN MILE ROAD • HAZEL PARK, MICHIGAN

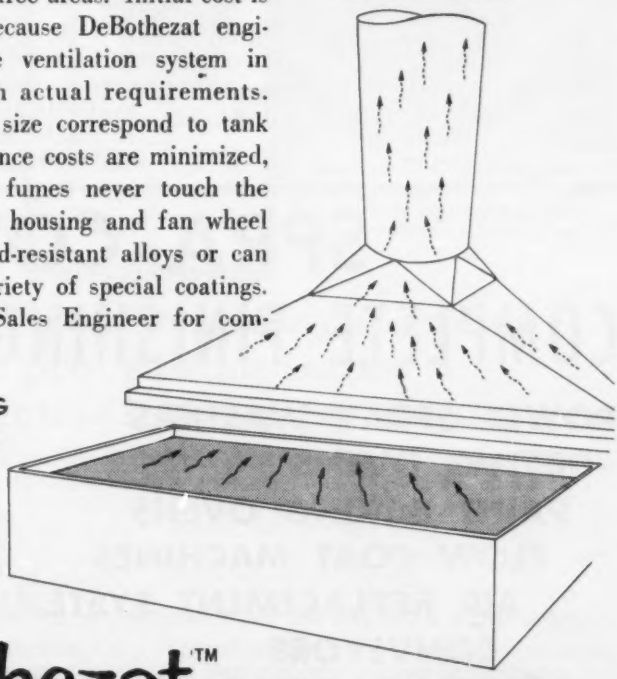
For more data circle 360 on Postpaid Card

Pulling Power

EXACTLY EQUAL TO THE FUME REMOVAL JOB

DeBothezat Bifurcator fans draw an even exhaust flow over the entire fuming tank surface, leaving no dangerously free areas. Initial cost is the lowest possible, because DeBothezat engineers plan your fume ventilation system in exact accordance with actual requirements. Motor power and slot size correspond to tank surface area. Maintenance costs are minimized, too, because corrosive fumes never touch the bifurcator motor. Both housing and fan wheel can be supplied in acid-resistant alloys or can be protected with a variety of special coatings. Ask your DeBothezat Sales Engineer for complete information.

Easily installed as part of duct inside or outside



FOR ELECTROPLATING
ALKALINE CLEANING
ACID PICKLING
HOT RINSING
DIPPING

De Bothezat™ FANS

A DIVISION OF

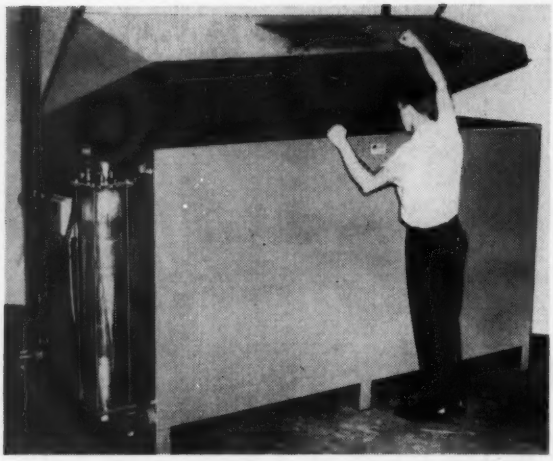
American Machine and Metals, Inc.

DEPT. PF-359, EAST MOLINE, ILLINOIS

FOR FURTHER INFORMATION
SEE OUR CATALOG IN
SWEET'S
PLANT ENGINEERING FILE
OR WRITE FOR COPY

IN CANADA: Represented by DOUGLAS ENGINEERING CO., Ltd., Toronto • Montreal

For more data circle 361 on Postpaid Card



G-S Corrosion Test Cabinet: for large parts

F., hold them within plus or minus ½ deg. F.

Manufacturer: G. S. Equipment Co., 15583 Brookpark Rd., Cleveland 35, Ohio.

For more data circle **17** on Reader Service Card

Plastic Valves

Socket-Welded Valve

Plastic gate valves with socket-weld ends have been introduced by Vanton Pump & Equipment Corp. The plastic valves are of the "Flex-Plug" type, offer combined features of straight-through no-pressure-drop flow and close throttling control.

An addition to the company's existing line of screwed-end valves, the socket-weld valves are available in sizes from ½ inch through two-inch in both polyvinyl chloride and styrene copolymer plastics.

SPRA-CON
COMPLETE FINISHING SYSTEMS

POWER SPRAY WASHERS
DRYING OVENS
PAINT BAKING OVENS
FLOW COAT MACHINES
AIR REPLACEMENT SYSTEMS
CONVEYORS

SPRA-CON ROTARY ARM WASHERS AND PAINT APPLICATORS

SEND FOR FREE CATALOG

the **SPRA-CON COMPANY**

3600 ELSTON AVE. • CHICAGO 18, ILLINOIS

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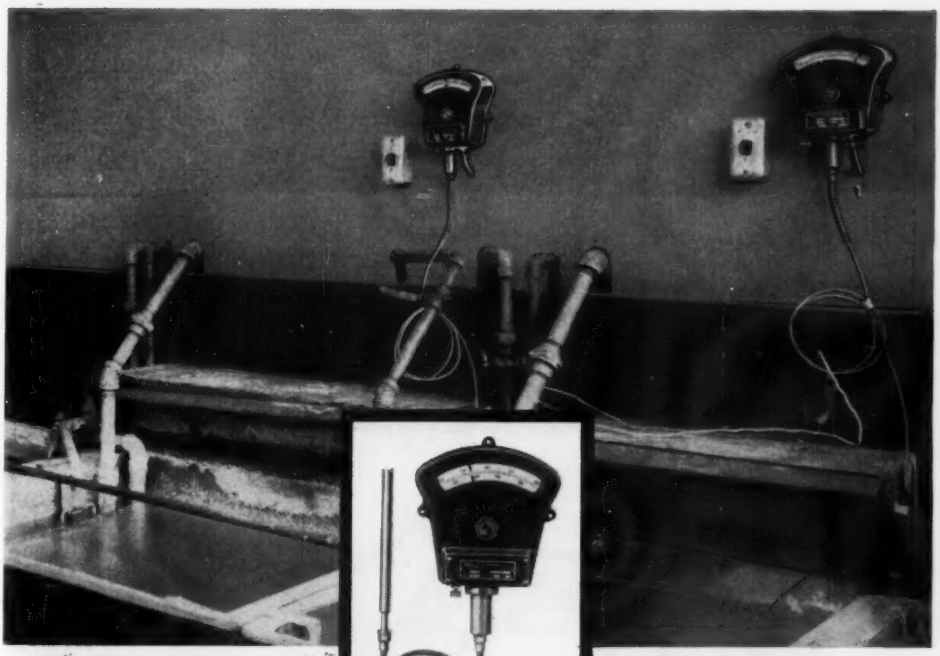
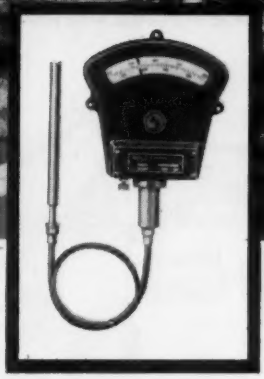


Bendix uses 60 Sarco LSI electric temperature controls on its processing tanks at Teterboro, N. J.



A single knob sets the temperature on this Sarco LSI electric temperature control. Easy-to-read dial shows temperature of bath.

How *Bendix* controls temperatures in 60 processing tanks with Sarco Electric Indicating Regulators

In the completely modernized plating department of Eclipse-Pioneer Division of Bendix Aviation Corporation at Teterboro, N. J., temperature in all processing tanks is controlled with Sarco LSI Regulators. This standardization has paid off in accuracy, dependability, and economy. Among the varied processes for which LSI's are now used are Black Dye, Dichromate Seal, Parker Lubrite, Hot Water Rinse, Electro Cleaner, Passivate, Black Oxide Copper and Chromium Plating.

You can get a complete Sarco system for as little as $130 a tank

This Sarco LSI makes it unnecessary to rely on erratic manual temperature control. Further, the low initial cost of the LSI and its almost negligible maintenance cost mean completely dependable temperature control with real economy. Call your nearest Sarco representative, or write for details on Sarco LSI temperature controls and your copy of Sarco Case History No. 174. 5927-A

SARCO
COMPANY, INC.

635 Madison Ave., New York 22, N. Y.

For more data circle 363 on Postpaid Card

The socket-welded valves are recommended by the manufacturer for service in severe applications such as corrosive chemical fluid flow.

Manufacturer: Vanton Pump & Equipment Corp., Hillside, N. J.

For more data circle **18** on Reader Service Card

★ ★ ★

Pickling "Blanket"

Amchem Products, Inc., has announced that Serseal chemical blankets are now available for use on acid pickling baths.

Serseal reduces heat loss and suppresses fumes.

By reducing fume concentration, corrosion of surrounding equipment is correspondingly reduced.

Manufacturer: Amchem Products, Inc., Ambler, Pa.

For more data circle **19** on Reader Service Card

★ ★ ★

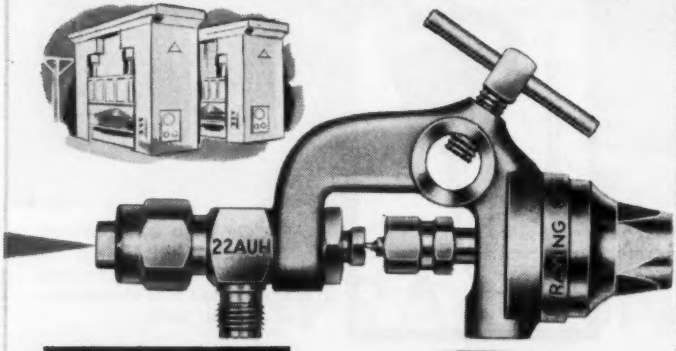
Durable Paint

A paint coating that is said to outlast the life of the metal product upon which it is applied has been introduced by J. Landau & Co., Inc., Carlstadt, N. J.

Called Dunal, the recently introduced coating can be applied by spray or dip, can be used as a primer or as a final finish, and can be guaranteed to outlast the lifetime of the product it clads, the manufacturer states.

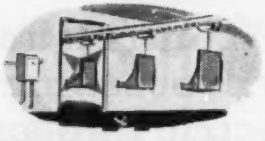
The manufacturer recommends this product for use in the appliance, automobile and aircraft industries. It is especially useful as a finish for parts that must be machined. In this application, the Dunal is applied and baked on the casting prior to machining. Grinding, milling, turning, lapping and boring operations will not harm the coating on the areas of the part that

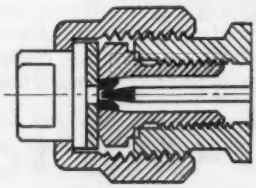
for AUTOMATIC hydraulic spray coating and painting



No. 22AUHSSTC
AutoJet

with
TUNGSTEN CARBIDE
valve seat and needle
•
STAINLESS STEEL
body and cap
•
TEFLON packings





for dependable, trouble-free performance—operates automatically at any required cycling speed, controlled by air actuated shut-off valve. Paint or coatings atomized by hydraulic pressure alone at pressures from 400 to 2,000 psi. Complete choice of interchangeable orifice tips in all spray patterns, capacities and materials.

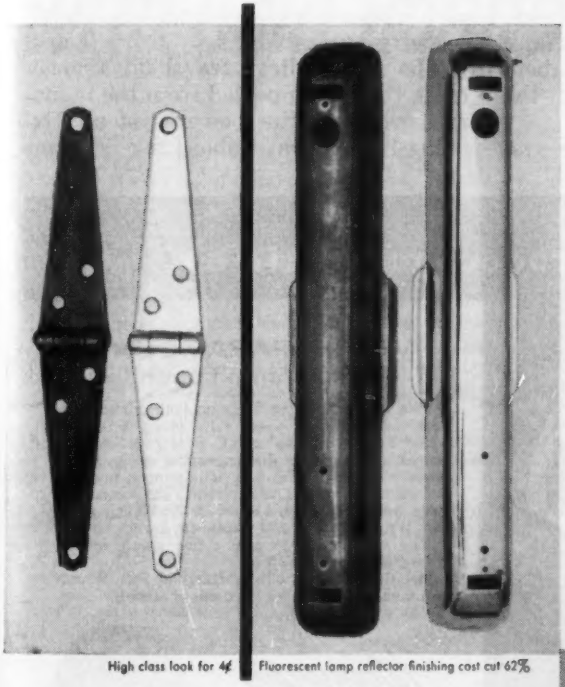
SPRAYING SYSTEMS CO.
3229 Randolph Street • Bellwood, Illinois

FOR INFORMATION WRITE FOR BULLETIN 96

For more data circle 364 on Postpaid Card

Shelf appeal can be increased for only 3¢ Finishing costs reduced to 12¢

If It Looks Good...It Sells Better



High class look for 4¢ Fluorescent lamp reflector finishing cost cut 62%

If you're looking for a way to increase the sales appeal of your products by adding a quality appearance at low cost, you should investigate vacuum coating.

While this modern process is not a cure-all, most likely you'll find it will add new life to the items you manufacture — and may cut your costs spectacularly, too! Brilliant, eye-catching, metallic finishes, in a wide range of colors, can be applied on plastics, metals, wood, glass, paper, fabrics and many other materials. Today's vacuum coatings are brighter than buffed and polished electroplating, cost less, and in some applications stand up better.

You don't have to take chances, either. Send us a sample of your product and give us details about its use. We'll tell you whether your application is a good one, show you how your product will look, and estimate your costs. Then, if you want, we'll supply a complete installation, guarantee its output, show you how to run it efficiently, and even train your operators. Write us today!

A Subsidiary of National Research Corporation

DEPT. 23-C, CHARLEMONT ST., NEWTON, MASS.

NRC

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EQUIPMENT CORPORATION

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are not disturbed by metal removal, the manufacturer states.

Manufacturer: J. Landau & Co., Inc., Carlstadt, N. J.

For more data circle **20** on Reader Service Card

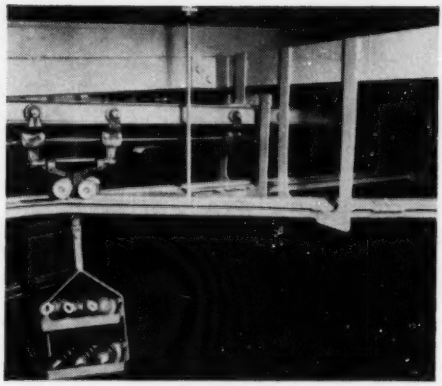
★ ★ ★

Power-and-Free Overhead Conveyor

An attachment for overhead conveyors which permits switching trolleys from one conveyor to another or into a free, gravity system has been introduced by Dearborn Cable-Link Conveyor Division of Dearborn Fabricating and Engineering.

This device makes it possible to switch conveyor trolleys through any processing operation and pick them up again at the completion of the operation.

The carriers travel in the free system by gravity or may be switched to another power system for operations such as painting, cleaning, impregnating, drying or baking.



Dearborn Power-and-Free Conveyor Trolley

The free trolleys travel on a lower track that is supported from the monorail, when in the power system. Existing Dearborn Cable-Link systems

Another fine product made finer . . .
with the PARAMOUNT "Finishing Touch"
"We require that the finish on both our stainless steel and chromium plated valve plungers be held within 7 to 12 microns," says C. B. Hunt & Son, Inc., manufacturers of precision pneumatic and hydraulic pressure valves. "Finish is a vital factor as it affects the seal of the valve. Our experience has proved that Paramount Felt Wheels are best for this buffing operation. We use an extra soft wheel with a white chrome buffing composition to give a fine polish without destroying close tolerances."
Precision finishes with Paramount Felt Wheels save time and money for hundreds of manufacturers, as they will for you. Contact your jobber today.
Paramount
Felt Wheels, Bobs, Sheet Felt
Bacon Felt Co. 447 West Water St., Taunton, Mass.
For more data circle 366 on Postpaid Card

Steam Requirements SLASHED 90% with Cold Bonderite System

50,000 lbs. of steam per hour *before*, 5,000 lbs. per hour *after* installation of Cold Bonderite System!

That's one of many amazing records being made in plants all over the country by this new Parker Rust Proof system.

The switch to Cold Bonderite requires no new equipment, no changes in layout, no new techniques to teach your crew. The specially formulated cleaner and Bonderite simply operate at greatly reduced temperatures, cutting heat requirements by 50 to 90%.

Results? Coatings of traditional Bonderite quality and uniformity with big heat and operating savings.

Nearly a hundred plants, in many industries, are cashing in on Cold Bonderite right now. Get this competitive advantage for *your* plant, too. Call in the Parker man in your territory and begin saving money now!

Temperature gauges tell the story. Special Parco Cleaners and Bonderites in Cold Bonderite System operate 40° to 75° cooler!

Since 1914—leader in the field

PARKER RUST PROOF COMPANY
2172 E. MILWAUKEE, DETROIT 11, MICHIGAN

BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE	TROPICAL
corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces	heavy duty maintenance paints since 1883

*Bonderite, Bonderlube, Parco, Parco Lubrite—Reg. U.S. Pat. Off.

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you can tell
CRES-LITE
BRONZE POWDERS
are Pure, Brilliant Metallic Bronze!

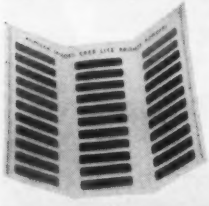
- by the brilliant sheen and full-bodied lustre!
- by the coverage—less cost per square inch of finished product!

Unequalled for smoother, more brilliant Plated-Effect Finishes—by spray, dip or flow coating.

IN STOCK—tremendous selection of colors including popular metallic pastels, statuary and antique shades.

COLORS MATCHED—with no variance in quality, color or lustre from batch to batch. Fast service guaranteed.

SPECIAL COLORS—Over 25 years experience in creating special colors and shades for the plastic and metal finishing trades. Satisfaction assured.



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NEW COLOR CARD FREE!
Full Range of Colors for Immediate Delivery

CRESCENT BRONZE POWDER CO.
118 W. ILLINOIS STREET, CHICAGO 10
1841 S. Flower St., Los Angeles 15

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can be converted to power-and-free systems with slight modifications. Transfer from power to free is executed by a simple mechanical switch, which can be manual, hydraulic, or air-operated.

Manufacturer: Dearborn Cable-Link Conveyor Div. of Dearborn Fabricating and Engineering, 19440 Glendale Ave., Detroit 23, Mich.

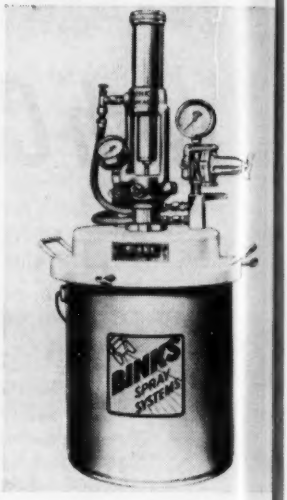
For more data circle **21** on Reader Service Card

★ ★ ★

Portable Paint Pump

An air-operated portable paint-handling pump introduced by Binks Manufacturing Company, is named the Pogo 5. It has a 2 to 1 delivery ratio and is designed to fit into any standard 5 gallon pail. Useful for light production painting.

Supplying up to a gallon of paint per minute, the pump requires 3 to 6 c.f.m. of air for constant operation.



Portable Pogo Pump

Manufacturer: Binks Manufacturing Company, 3118-40 W. Carroll Ave., Chicago 12, Illinois.

For more data circle **22** on Reader Service Card

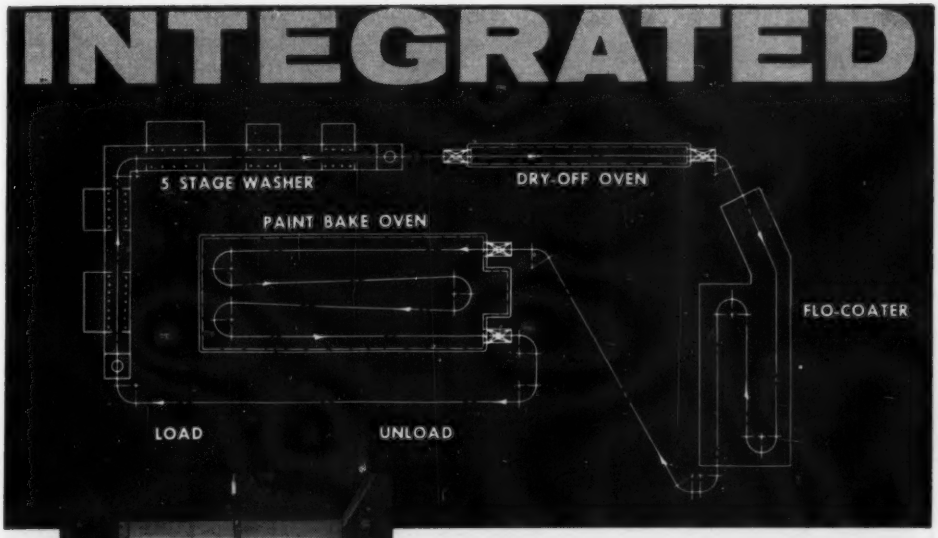
★ ★ ★

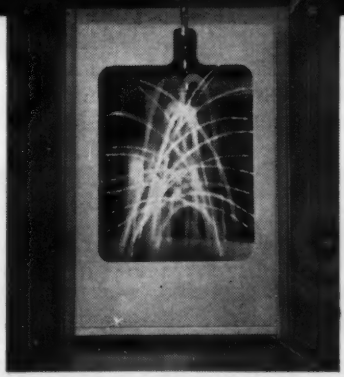
Dust Collector

Dustkop Model 1150, a compact dust collector made by Aget Manufacturing Co., is said to be particularly useful for carrying away dust from machines where dust volume is high and space is limited.

The small unit handles 1400 cubic feet of air per minute, is driven by a

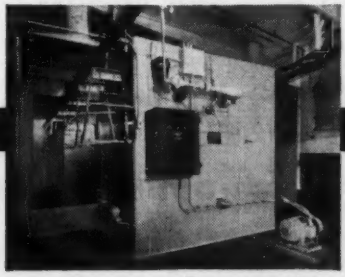
INTEGRATED





Unique lacquer Flo-Coater has wide flare and long flow path to suit the product—supermarket shopping carts and baskets. Compact MOCO installation gives substantial savings in coating materials over other systems.

Air-jet "curtains" at entrance and exit of MOCO baking oven act as a barrier against heat loss. The system is fully equipped with electronic flame failure safeguards.



Finishing Systems– *Cost Controlled* for Modern Production

Integrated Finishing Systems are more than just a plan and installation designed to meet the customer's needs in materials, space and output. At Michigan Oven, engineering a cost-controlled finishing system means equipping for today's demands, and for tomorrow's production.

The lacquer Flo-Coating system illustrated above is a complete and efficient system. Behind its installation lies a thorough study of the plant, of the product, of quality control and initial investment.

This finishing system will pay for itself in a relatively short time. It's engineered for economy, low maintenance and safety—and it will adapt readily to future expansion at low cost.

Send for a free MOCO bulletin showing typical finishing system applications, including products, process and specifications, or write for the name of the MOCO representative nearest you.

MICHIGAN OVEN COMPANY

MOCO

FINISHING EQUIPMENT DEPARTMENT

431 BRAINARD, DETROIT 1, MICHIGAN

Washing Machines • Bonderizing Units • Dry-off Ovens • Dip Tanks • Spray Booths • Flo-coaters • Finishing Ovens • Conveyors

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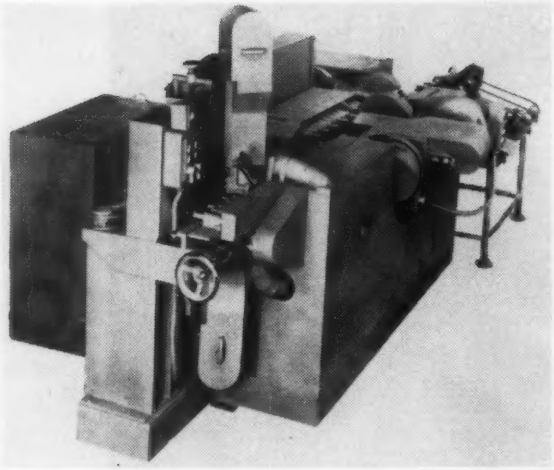

Dustkop Model 1150 installed on an Engelberg-Huller abrasive-belt grinding and deburring machine. This machine is used for finishing typewriter tabs and margin racks, performs operations that formerly required six machines.

1½-h.p. motor. A Fiberglas filter removes all particles down to and including 0.5 micron size. Air may be recirculated.

Manufacturer: Aget Manufacturing Co., Adrian, Mich.

For more data circle **23** on Reader Service Card

★ ★ ★

Precious Metal Plating Unit

Description: A rectifier designed specifically for plating of precious metals on electronic components includes a sangamo ampere hour meter which will accurately measure deposition of metal and determine amount of metal to be replaced; an ampere meter with 20-milliampere graduations, which assures accuracy in plating minute parts; and an automatic timer that regulates plating interval.

The unit also has a 0-10 ampere meter for normal operation; 0-10 volt meter; stepless voltage control from 0-8 volts; full-wave selenium rectifier,

Do you have YOUR copy of PERMAG'S LATEST MANUAL OF BARREL PROCESSING OPERATIONS?

Contains latest procedures on Coloring—Deburring—Cleaning—Roughing—Plus many plant case histories that can help you.

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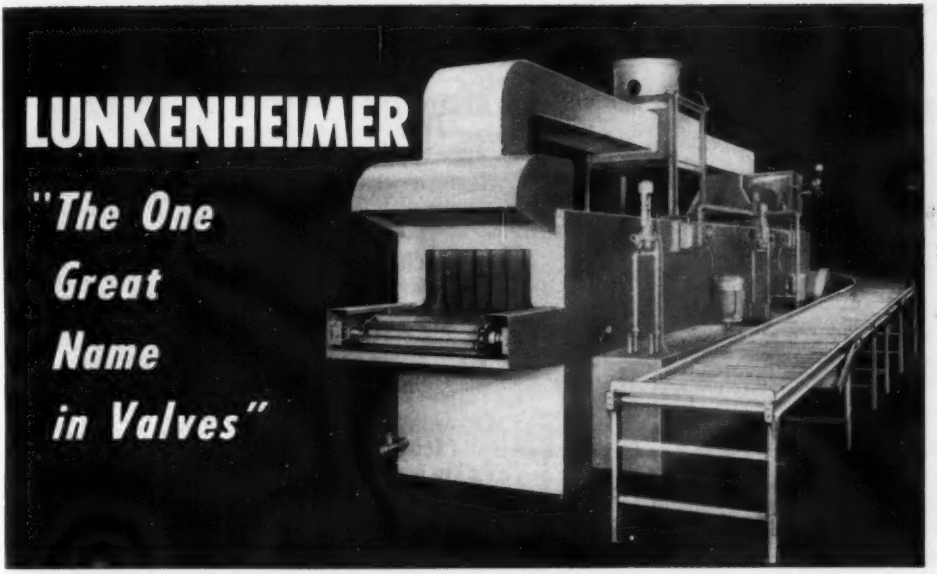


Installs an

A-F WASH-RINSE-DRY MACHINE

with A-F Gravity Return Conveyor for 1 MAN OPERATION

TO CONTINUE to assure *quality control* in the production of *quality performance* valves The Lunkenheimer Co. recently installed this A-F Wash-Rinse-Dry Machine to thoro-clean its iron and steel valve components.

Baskets of parts are discharged on the A-F Unload Conveyor, are automatically started around the curve and are returned to the operator on the A-F Gravity Roller Conveyor.

The A-F Washer is provided with new type vertical pumps and flight bar conveyor. Gates are arranged in the A-F Roller Conveyor to permit access to the machine controls and screen tanks.

Whatever *your* metal products cleaning and handling problems, A-F is the one company that can provide you with a prompt, economical solution to either — or both. Write today.

A-F *ENGINEERED*
Cleaning and Finishing Machines
Plant-wide Conveying Systems
Pre-Engineered Conveyors—Roller, Wheel, Belt, Trolley

THE ALVEY-FERGUSON CO. • 616 Disney St., • CINCINNATI 9, OHIO

For more data circle 371 on Postpaid Card

Ramyr Electronic Plater: precious metals

convection cooled. Input current, 115 volts, single phase, 60 cycles; filtered d.c. output, 0.8 volts, 10 amperes.

Manufacturer: Ramyr Manufacturing Co., 1779 N. Main St., Los Angeles 31, Calif.

For more data circle **24** on Reader Service Card

Heavy-Duty PVC Pipe Fittings

Heavy-Duty PVC Fitting

Description: A line of "Super Heavy Duty" fabricated PVC pipe fittings features butt-welded joints "beefed up" with continuous bands of PVC. The recently developed banding method used on these joints increases the safety factor, especially in larger-diameter piping systems, the manufacturer states. Available in many sizes, all standard fittings.

Manufacturer: S & C Manufacturing Co., 6245 Wiehe Rd., Cincinnati 13, Ohio.

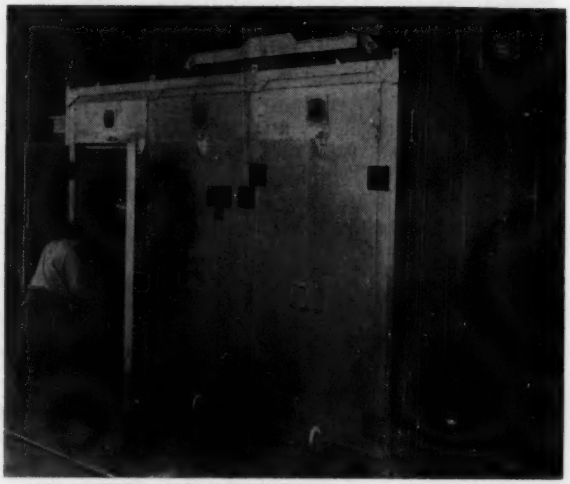
For more data circle **25** on Reader Service Card

for the MOST in DRYING or BAKING

ROCKWELL OVENS

You get the most uniform, economical, recirculation heating in Rockwell Ovens. Thousands of them the world over prove their excellent performance.

Made in standard cabinet, rack or truck type, single or multiple compartment—gas, electric or steam heated. Also special batch loading or conveyor types. Write for Catalogs.



W. S. ROCKWELL CO.
2909 Eliot Street
Fairfield, Conn.

For more data circle 372 on Postpaid Card

GET *ALL* THE ANSWERS
TO *YOUR* FINISHING PROBLEMS

at the

FIFTH INDUSTRIAL FINISHING EXPOSITION!

(Held in conjunction with the
GOLDEN JUBILEE CONVENTION
of the
AMERICAN ELECTROPLATERS' SOCIETY)

The finishing experts will all be under one roof next June. In Detroit, at the Detroit Artillery Armory, from June 15 to 19, at the Fifth Industrial Finishing Exposition!

Take your problems to them. Get expert help . . . at the largest display of finishing equipment, materials and processes ever assembled under one roof.

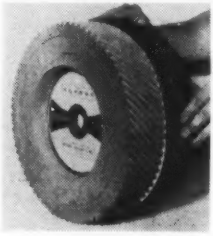
Make a list of your plating problems. Take it to Detroit with you. See the men who man the booths. The experts with professional, up-to-date help for you. They'll be there to demonstrate the right way to solve your problems.

If you want more information on the Fifth Industrial Finishing Exposition *now*, ask the exposition chairman: • • • • • • • • • •

HOWARD J. McALEER
3171 BELLEVUE AVE.
DETROIT 7, MICHIGAN

Expanding Polishing Wheel

Description: An expanding polishing wheel is made of a metal hub to which rubber is molded. Abrasive band fits loosely around the wheel while at rest. When wheel is brought to operating speed, centrifugal force causes it to expand and grip the band. Called the E-Z-Kut Wonder Wheel, this unit is said to have excellent cutting power.



Mermac Wheel

Manufacturer: Mermac Products, Inc., 1144 South Kostner, Chicago 24, Illinois.

For more data circle **26** on Reader Service Card

Titanium Anode Hooks, Baskets

Anode hooks and baskets made of commercially pure titanium resist the corrosive effects of nickel and chromium plating solutions, last indefinitely even if submerged in the plating acid, according to the manufacturer, Mallory-Sharon Metals Corporation.

Since the hooks can be submerged in the acid, scrap losses and recovery costs are reduced.

Both hooks and baskets are available in standard sizes and shapes, and in special sizes on request.

Manufacturer: Mallory-Sharon Metals Corporation, Niles, Ohio.

For more data circle **27** on Reader Service Card

★ ★ ★

Ultrasonic Degreaser

The Detrex 1288 Soniclean Degreaser uses high-frequency (400 kc.) vibration and stabilized trichlorethylene to clean parts well enough that in-

Rhodium
ELECTROPLATING SOLUTIONS
Technological knowledge acquired through many years of experience, plus special processes and equipment, assure the high quality of our Rhodium Plating Solutions.
Recommended for contact surfaces of switches, waveguide parts and other electrical applications, such as printed circuits...Can be applied in extremely heavy deposits, up to 100 milligrams per square inch.
Rhodium plating provides the advantages of whiteness, lustre and corrosion resistance of a precious metal.
Consult our staff, without obligation, about your specific plating problems.
SIGMUND COHN MFG. CO., INC.
121 SOUTH COLUMBUS AVENUE • MOUNT VERNON, NEW YORK
SINCE 1901 — Specialists in the Unusual

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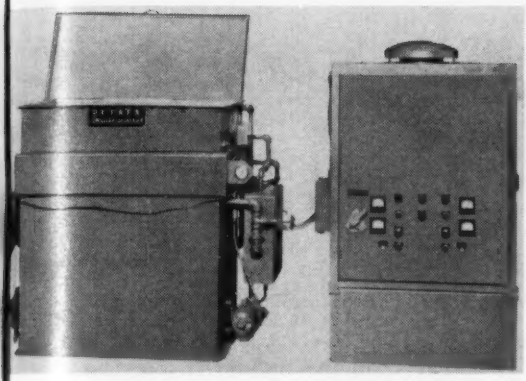


Detrex Model 1288 Ultrasonic Degreaser

spection under a high-power wide-field binocular microscope will discern no soil, the manufacturer states.

The unit filters distillate, removes everything down to two microns, is useful in cleaning delicate parts.

Manufacturer: Detrex Chemical Industries, Inc., Detroit 32, Mich.

For more data circle **28** on Reader Service Card

Non-Acid Rust Remover

"Striplite" is a non-acid material for removing rust, scale and black oxide from steel. It will not attack the base metal.

One to four pounds of Striplite salt are dissolved in a gallon of water and the solution is used at 180 deg. F. to boiling. If necessary the solution can be used electrolytically. Activity is proportional to strength, temperature, and the presence or absence of electric current.

The salt is said to work successfully in extreme cases, even in removal of heavy black oxide.

To speed work, cyanide can be added to the electrolytic bath, but caution must be observed in the disposal of dangerous fumes. Striplite can also be used for soak derusting with a non-boiling solution.

Manufacturer: Du-Lite Chemical Corp., Middletown, Conn.

For more data circle **29** on Reader Service Card

COAT FIRST ▸ MACHINE AFTERWARDS

Dunal

THE MIRACLE METAL FINISH

Takes Boring, Grinding, Tooling, Lapping, Burring, Milling And Will Not Chip, Crack, Mar or Peel!

DUNAL Defies CORROSION — EXTREME TEMPERATURES — Heat, Cold; HIGH IMPACT, ALKALIS, ACIDS, SALT SPRAY, GREASE HUMIDITY, MOISTURE, ETC.

CASE HISTORY: Needed—a coating that can be applied to a production casting before boring. A coating to withstand boring, machining, hot dip cleansing and degreasing. A finish that will take extreme pressure and temperature needed for press fitting of other units into the casting without cracking, chipping, marring or peeling.

SOLUTION: DUNAL—the amazing metal finish that outlasts the lifetime of the product! DUNAL can be dipped or sprayed and then baked . . . DUNAL also comes in colors.

FOR FULL INFORMATION, WRITE, PHONE, WIRE

Look to Landau for direction

J. LANDAU & CO. Inc.

Manufacturers of Quality Industrial Finishes SINCE 1920

CARLSTADT NEW JERSEY

For more data circle 375 on Postpaid Card

Drawing Compound

Schaffner Manufacturing Co., Inc., has developed Steel Drawing Compound DC-1. Trade-named "Steel-Draw," this product will prevent sticking or binding of blanks in the draw dies, protect finish applied before forming, prevent galling of steel dies, and protect hard rubber dies against abrasion, Schaffner says.

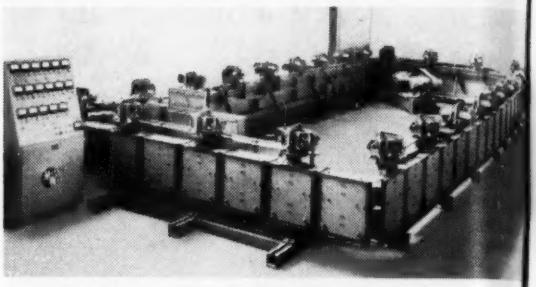
Manufacturer: Schaffner Manufacturing Co., Inc., Emsworth, Pittsburgh 2, Pa.

For more data circle **30** on Reader Service Card

★ ★ ★

Polishing-Buffing Conveyor

Murray-Way Corporation has developed a polishing-buffing conveyor with horizontal and vertical platens and sealed-line construction.

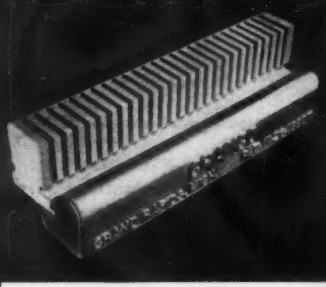


Murray-Way's Polishing-Buffing Conveyor

Fixtures can be mounted on the horizontal or vertical platens, or may be mounted on both at the same time. Fixtures may be fixed-mounted, revolving or cam indexed. The platens form a seal with each other and with the frame, protecting roller supports, drive chains and guides from abrasives and dirt.

Available in rectangular or straight-line design, this conveyor is equipped

GRANCO



Granco Irradiant Grid Gas Burner

Your products will glow when cured and dried with Granco flameless gas burner systems.

GRANCO INC.

...Specializing in designing and building to entire customer satisfaction . . .

Granco builds radiant ovens, dryers and furnaces.

Granco builds industrial washers and water wash spray booths.

Granco has original ideas, initiative, ability to design and install any size or style system, whether it is convection, radiation or otherwise.

Write for folders illustrating our extensive range of engineering and building know-how.

317 32nd STREET S.W.
GRAND RAPIDS 8, MICHIGAN

For more data circle 376 on Postpaid Card

with either a continuous drive or intermittent drive to permit variable dwell times.

Manufacturer: Murray-Way Corporation, Birmingham, Mich.

For more data circle **31** on Reader Service Card

★ ★ ★

Printed Circuit Fluxes

Resin-type fluxes, finely demarcated for increased solderability and low corrosion potential, are designed for printed circuit production. They make possible the soldering of badly oxidized surfaces and become active at heats ranging from below the melting point of solder to any higher temperature desired.

Called Lonco Resin - Fluxes, these fluxes maintain properly balanced wetting for low - temperature soldering. This characteristic is important in protecting the quality of components and the printed circuit board itself. It also makes possible filleting of the solder in and/or up the holes for more reliable connections. Ability to "bridge" (fill holes) is increased, the manufacturer states.

Lonco Resin-Fluxes are available in five grades of solderability value, corrosion potential and specific gravity.

Manufacturer: London Chemical Co., Inc., Dept. PFC, 1535 N. 31st Ave., Melrose Park, Ill.

For more data circle **32** on Reader Service Card

★ ★ ★

Plastic Cartridge Casing for Demineralizers

Barnstead Still & Demineralizer Co. has developed a plastic cartridge casing for the disposable cartridges used in the Bantam Demineralizer.

Drying time

CUT IN HALF!

with . . .

Model 20 New Holland

KREIDER

Centrifugal Dryer

Air-Dries . . . as it Spin-Dries. Gives smooth, moisture-free surfaces without scoring or marring . . . assures faster production . . . saves money wasted on "rejects."

SPECIFICATIONS:

1 hp motor—220, 440, 550 volts—2- or 3-phase. Spins 75-lb. loads at 825 rpm. Quiet V-belt drive. Arc-welded, steel-plate construction. Weight 490 lbs. Minimum floor space. Meets N.E.C. specs. Auxiliary electric or steam units available as optional equipment.

Send for illustrated 4-page folder. Address: Department PF-0359

NEW HOLLAND MACHINE COMPANY

NEW HOLLAND, PA.

For more data circle 377 on Postpaid Card

The casing, top and bottom caps, and grids are of inert plastic. Advantages: elimination of any possibility of rusting and complete freedom from metallic contamination of the pure water.

Standard layer-type cartridge, and mixed-bed high-purity-type cartridges are available. The plastic units are also available charged with oxygen-removal resin, organic-removal resin, and charged with cation resin only. All cartridges are color-coded.

Manufacturer: Barnstead Still and Demineralizer Company, 12 Lanesville Terrace, Boston 31, Mass.

For more data circle **33** on Reader Service Card

★ ★ ★

Chrome Stripper, Pickle

A dry mixture that pickles all base metals and strips chromium has been introduced by Hanson-Van Winkle-Munning Company.

Pickelene 300, as the mixture is designated, will produce a bright, smut-free surface and will give off no objectionable fumes. It was developed to eliminate handling awkward carboys and to simplify waste disposal.

The mixture includes acid salts, activators, and surface active agents. An aqueous solution may be used as an activating acid dip prior to plating on steel, brass, copper, or zinc die castings, or as a pickle for removal of rust, heat treat scale, oxides, and residues of brazing flux from steel.

Concentration of solution varies from four to 32 oz./gal., depending upon application. Concentration, operating temperature, and immersion time recommended for several typical applications are given in Table I.

Chromium may be stripped by any of the following methods, using a concentration of one to two pounds

Table I

RECOMMENDED CONCENTRATIONS OF PICKELENE 300 FOR VARIOUS APPLICATIONS

Application	Concentration (oz./gal.)	Operating Temperature	Immersion Time (seconds)
Acid dip on steel prior to bright plating.	16	room	15
Acid dip on steel prior to phosphatizing.	32	room	60 - 180
Acid dip on copper plated zinc die castings prior to nickel-chromium plating.	8 - 16	room	10 - 60
Acid dip on brazed tubular steel.	16	room	30
Steel stampings prior to nickel-chrome plating.	16	room	90
Pickle steel after heat treating.	12 - 32	140 deg. F.	varies
Pickle steel after 6 volts cathodic treatment.	12 - 32	140 deg. F.	varies
Acid dip on zinc die castings prior to bright copper.	4	room	15
Acid dip on buffed brass prior to nickel-chromium plating.	8 - 16	room	10 - 60

Pickelene 300 per gallon of solution:

1. Immerse the plated parts in solution for five seconds, remove for 10 seconds, return to bath until stripping is completed. Temperature, 180 to 200 deg. F.
2. Apply cathodic current at not less than two volts for a few seconds, completing stripping without current. Use lead or graphite anodes. Temperature, 80 to 180 deg. F.
3. Touch zinc, iron, or aluminum to chromium plate for a few seconds, remove catalytic metal, and leave work in bath until stripping is completed. Bath temperature should be 80 to 180 deg. F.

Manufacturer: Hanson - Van Winkle - Munning Co., Church St., Matawan, N. J.

For more data circle **34** on Reader Service Card

★ ★ ★

Alkyd Enamel

An alkyd enamel for exterior and interior applications has been announced by The Glidden Company.

Called Industrial Speedenamel, the multipurpose enamel can be applied by spray or dip, and can be air-dried or baked.

The resultant finish is tough, flexible, has excellent gloss and color retention.

Speedenamel has good weathering properties and outstanding adhesion.

Manufacturer: The Glidden Co., 900 Union Commerce Bldg., Cleveland, Ohio.

For more data circle **35** on Reader Service Card

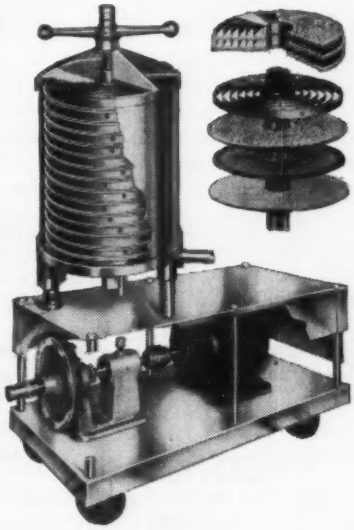
★ ★ ★

Hand Trucks

A line of materials handling trucks

ELIMINATE COSTLY PLATING REJECTS

due to pitting or rough deposits!



Sectional view of "Sealed-Disc" filter and pump unit. Portable or fixed installations are available in a wide range of capacities.

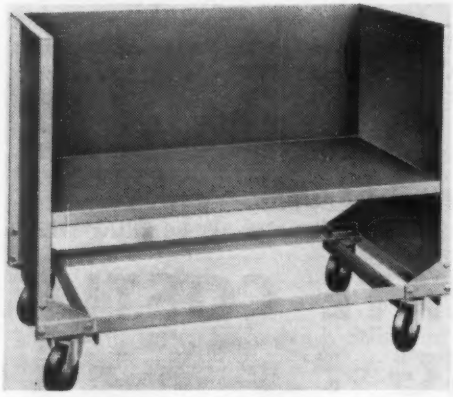
The Alsop Method of "SUB-MICRON" filtration assures you of totally clean plating solutions at all times with no interruption in your plating cycle! *All* impurities are automatically removed as fast as they are formed or introduced.

ALSOP

FREE! Your guide to better plating. "The Use of Filters in Electroplating" by J. B. Mohler

ENGINEERING CORPORATION
1403 Keen St., Milldale, Connecticut

For more data circle 378 on Postpaid Card



Wilder Hand Truck: 16 different types

recently announced by Wilder Mfg. Co., Inc., includes sixteen different truck styles, each available in any of four standard sizes. Types include platform bin, table, shelf and box trucks.

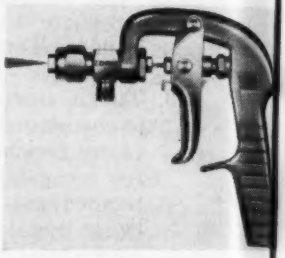
Manufacturer: Wilder Mfg. Co., Inc., Port Jervis, N. Y.

For more data circle **36** on Reader Service Card

★ ★ ★

Airless Paint-Spraying Gun

Spraying Systems Co. has introduced Model 22 HPSSTC Gun-Jet heavy-duty spray gun, for use in hydraulic spray coating and painting at pressures up to 2,000 p.s.i. This gun operates without the use of air, requiring only high pressures for atomization.



Airless Gun

Orifice tips are interchangeable and are available in a wide choice of capacities, spray angles and materials. Choice of tip materials include stain-

FINEST in REPLACEMENT RECTIFIER STACKS

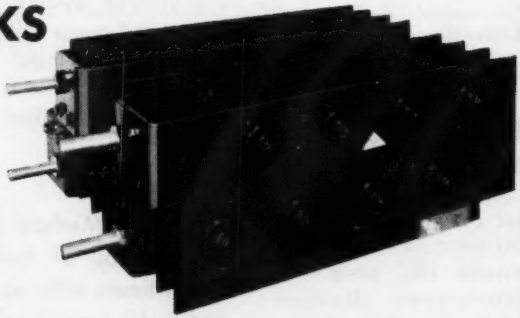
FOR

"LEKTRON"®

OR

UDYLITE-MALLORY

Magnesium copper sulphide rectifiers add longer life and subtract more trouble from your power supply. Magnesium fins dissipate heat like pop at a kids' picnic. Lighter weight too. Matching pairs.



750 AMP. — 12 VOLTS
1500 AMP. — 6 VOLTS

ONLY $285.00
F.O.B. INDIANAPOLIS, INDIANA

ELECTRONIC RECTIFIERS, INC.
2102 SPANN AVENUE. INDIANAPOLIS 3, INDIANA

For more data circle 379 on Postpaid Card

less steel, hardened stainless steel, chrome plated brass and tungsten carbide inserts in chrome plated tip body. The valve seat and mating needle insert are made of tungsten carbide for resistance to abrasion. The stainless steel body and Teflon packings provide resistance to chemical action.

Manufacturer: Spraying Systems Co., 3229 Randolph St., Bellwood, Ill.
For more data circle **37** on Reader Service Card

★ ★ ★

Flock Kit

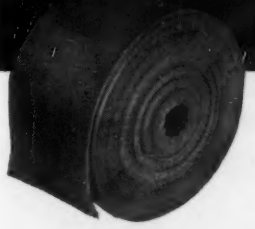
The "Suede King" Master Flock Kit includes flock gun, spray-type adhesive, and six different colors of rayon flock. The flock gun can be operated by air supplied from a small air compressor.

The kit consists of six colors of rayon flock—red, blue, green, brown, black, and white, each of which covers approximately 15-20 square feet; one aerosol can of adhesive for use on three dimensional surfaces or flat surfaces where one color of flock is used; one can of adhesive and brush to be used where overall flocking is not desired; one squeeze bottle of adhesive for free-hand drawing of monograms and other designs; one all-purpose

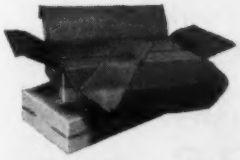
Cellusuede's "Suede King" Master Flock Kit

For Dust Free Finishes!

BOND TACK CLOTH



In ROLLS
Cut off any size piece to use as needed.



IN BULK
Cut and folded. Ready to use.

STAYS SOFT AND TACKY — A SPECK-FREE FINISH EVERY TIME

Now Available In Rolls or Cut Bulk—White or Gold In Four Different Types of Cloth

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up! Choice of Standard, Extra Tacky or Less Tacky, as desired.

The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" or 9" x 18" for ease of handling. ALL BOND TACK CLOTH is *Spontaneous Combustion Proof, Lint-Free and Wax-Free.* Gives a sparkling speck-free Finish *every time.* Clean and Sanitary. No waste.

TRY THEM and COMPARE RESULTS. Samples Gladly Sent Upon Request.

"The Tacky Wiper Specialists"

Bond® CHEMICAL PRODUCTS CO.

2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS

ALSO INDIVIDUALLY PACKED IN GLASSINE ENVELOPES —144 to the Carton

A WARRANTY OF SATISFACTION IN EVERY CARTON

For more data circle 380 on Postpaid Card

stencil knife for cutting various shapes, decorative designs and letters; one flock gun.

Manufacturer: Cellusuede Products, Inc., 512 N. Madison St., Rockford, Illinois.

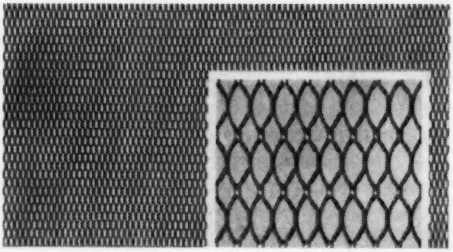
For more data circle **38** on Reader Service Card

★ ★ ★

Anodes for Rhodium Plating

Description: Expanded mesh anodes for rhodium electroplating made from platinum-clad tantalum are said to allow greater anode distribution and, consequently, more uniform plating. The platinum layer need be no thicker than 0.00025 inch.

Tantalum was selected as the base metal because it is not affected by chemicals in electrochemical processes, such as those in the rhodium plating bath, nor does it contaminate the bath.



Platinum-Clad Tantalum Expanded-Mesh Anode Material: for use in rhodium plating

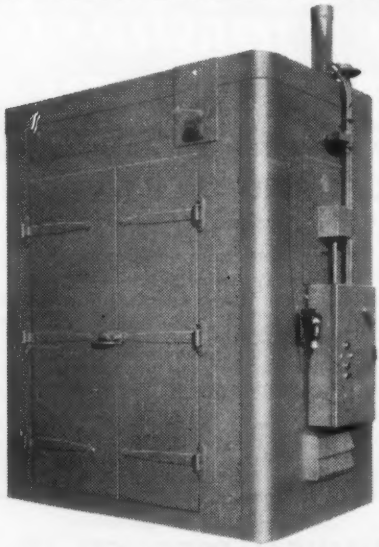
Manufacturer: Metals & Controls Corp., General Plate Div., Attleboro, Massachusetts.

For more data circle **39** on Reader Service Card

★ ★ ★

Preformed Tumbling Media

A preformed tumbling media made by Fortune Industries, Inc., is available in three basic shapes: triangles, cylinders and diamonds.



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PROBLEMS?

Discuss them with B & S Fabricators! You'll be pleased with our qualifications for interpreting your needs and our ability to deliver the correct equipment on time.

Put our know-how to work for you and turn a marginal operation into a profitable one.

Proved in Industry

B & S FABRICATORS, INC.

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For more data circle 381 on Postpaid Card

Any of these shapes (called "Preforms") are available in several materials (aluminum oxide, silicon carbide, aluminum oxide-silicon carbide blend, porcelain) and in various sizes. Size selected depends upon size and shape of part being processed. Media chosen should be sized so that it will not stick in holes and recesses.

Various grit sizes of abrasives are available, and five different bonding agents are used, depending upon the application.

Specific details on the media recommended for various deburring and barrel finishing operations are available from the manufacturer.

Manufacturer: Fortune Industries, Inc., 11770 Dexter Rd., Chelsea, Mich.

For more data circle **40** on Reader Service Card

★ ★ ★

Tumble Painter

A concrete mixer made by United States Forge and Foundry Co. is useful in tumble painting small parts. The unit is leakproof, has a deep tub.

Manufacturer: United States Forge and Foundry Co., Construction Equipment Div., Pulaski, N. Y.

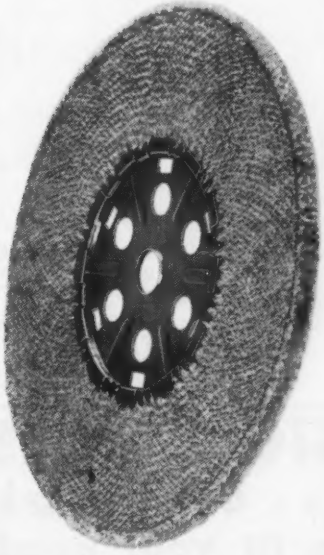
For more data circle **41** on Reader Service Card

Mixing Machine: useful for tumble painting

FOR TOUGH OPERATIONS

DRAWN, STAMPED OR CAST METALS

STITCHED BIAS SISAL BUFFS



Tough and extremely adaptable, these SISAL Sections can bring new standards of efficiency and quality to a broad range of polishing and buffing operations. Each section is made of High Quality SISAL cloth, tightly woven and heavily compressed. The rugged sisal cloth is cut on the bias. Every strand of sisal fibre is anchored and angled for maximum cutting power at the contact edge. This insures even wear, too. That's one reason why "GARFIELD" Bias Sisal Buffs outlast any others for heavy-duty cutting and polishing jobs on ferrous and nonferrous metals.

Garfield BUFF CO.

CApital 6-7900

6 Clinton Road, Caldwell N. J.

For more data circle 382 on Postpaid Card

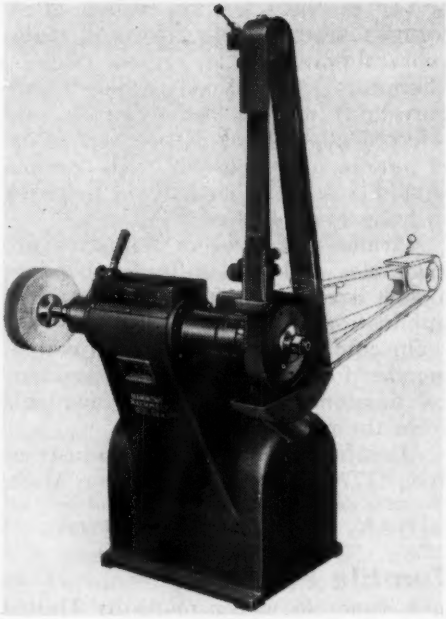
Abrasive Belt Polishing Head

An abrasive belt polishing head recently introduced by Hammond Machinery Builders, Inc., makes it possible to combine polishing and buffing operations on a single lathe.

Designated the UP-2 head, the unit is designed for mounting on Hammond OK, RL and ROL polishing lathes.

The UP-2 head is recommended for light to medium-duty polishing operations and can be mounted on either or both sides of the lathe.

Spindle speed of 1,750 r.p.m. gives 5,500 s.f.p.m. using a 12-inch-diameter contact wheel. The upper idler pulley assembly is adjustable for belts from 52 to 90 inches in length. Belt width: 1 to 2½ inches. Dust scoop with exhaust outlet comes with the head.



Hammond Model 3-ROL polishing lathe with UP-2 belt head in vertical position. Line drawing shows horizontal position.

Manufacturer: Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

For more data circle **42** on Reader Service Card

★ ★ ★

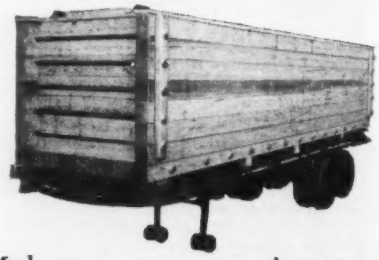
Vitreous Enamels for Aluminum

Aluminum enamel frits in "flake" form are now available from Ferro Corporation.

Advantages of the "flaked" aluminum frits, according to Ferro, are improved uniformity, superior suspension in slip form, decreased "aging" of milled enamel, and greater workability.

Simultaneously with the introduction of the flaked aluminum frits, Ferro announced techniques for their use with new types of wet and dry mill-addition agents. These techniques provide for greater flexibility in "tail-

BIG TANKS
...or small
to fit *your* needs



Made to meet *your* requirements... from only the finest woods. Over 75 years experience. Get free estimates.

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1571 Harrison Street, Kalamazoo, Michigan

For more data circle 383 on Postpaid Card

oring" porcelain enamels for specific applications on aluminum, overcoming problems arising from local plant conditions, and in holding colors constant in production.

Manufacturer: Ferro Corporation, 4150 E. 56th St., Cleveland 5, Ohio.

For more data circle **43** on Reader Service Card

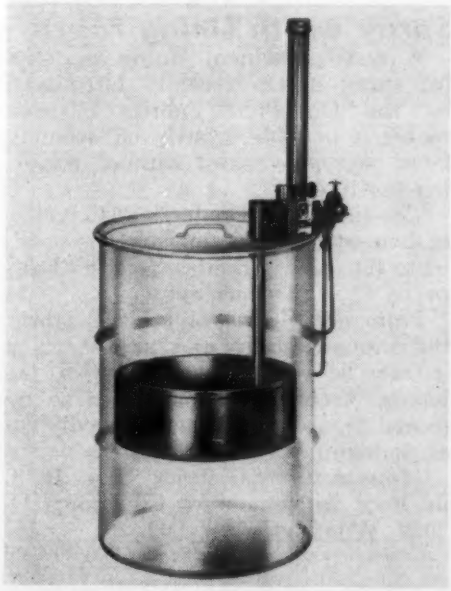
★ ★ ★

Parts Washer

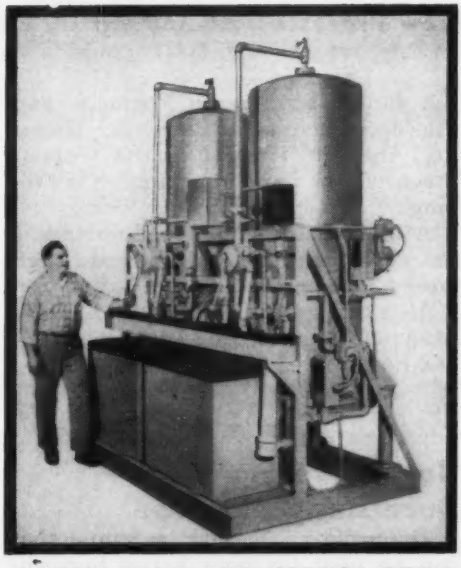
The Magnus Porto-Lif, an air-powered, mechanical agitating device that can be attached to a 55- or 30-gallon open-head drum or almost any still tank, converts the drum or tank into an efficient cleaning unit.

A single lever controls the complete cleaning operation. A flick of the lever lowers the platform of dirty parts into the cleaning solution. Another flick of the lever agitates the parts in the solution—140 up-and-down motions per minute.

Motion of the parts in the solution creates a swirling, scrubbing action of



Phantom view of Magnus Porto-Lif agitating device mounted on a 55-gallon drum



BARNSTEAD DEMINERALIZERS FOR METAL FINISHING IN CAPACITIES OF FROM 30 to 2500 G.P.H.

In rinsing or plating . . . in anodizing or make-up . . . in fact, wherever pure, mineral-free water is a necessity . . . Barnstead Demineralizers can save you money. First, because they are versatile: they come in all sizes from 30 to 2500 gallons per hour and in mixed-bed, two-bed, and four-bed models. Second, because they are low-cost in operation, producing pure water for as little as 5c per thousand gallons. Third, you get authoritative answers from Barnstead — with over 75 years' experience in ALL phases of producing pure water for all industrial applications.

NEW LITERATURE:

Catalog 127-A illustrates Barnstead's complete line of water demineralizers, and presents factual information which can help you reduce waste and save money.

Barnstead
STILL AND STERILIZER CO.

12 Lanesville Terrace, Boston 31, Mass.

For more data circle 384 on Postpaid Card

the liquid against all surfaces and into deep recesses of the work, "shearing" the dirt from the parts without the need for hand brushing or scrubbing.

A third movement of the lever raises the work out of the liquid to waist-high level for inspection and unloading.

Manufacturer: Equipment Div., Magnus Chemical Co., Inc., Dept. PF, 208 South Ave., Garwood, N. J.

For more data circle **44** on Reader Service Card

★ ★ ★

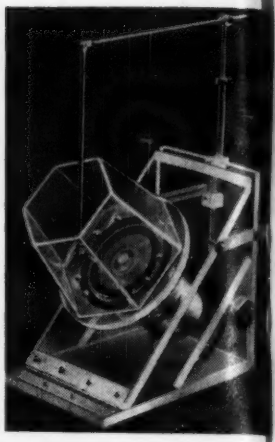
Barrel Plating and Burnishing Machine

Description: A small machine that can be used for both barrel burnishing and barrel plating is useful in processing samples and small lots and in laboratory work.

NEW!
Sethco all-in-one FILTER
from 50-200 Gals./Hr.
Model LEI-10—effective Depth Filtration of sensitive - expensive - hazardous solutions
• Stainless Steel Chamber
or
• 'Full View' Chamber: High Temp. Epoxy/Lucite.
• Tube: Cotton, Dynel, Porous Stone/Carbon.
• 'Canned' Pump: Stainless Leakproof, Centrifugal.
• Motor: ⅓ HP totally enclosed
the PUMP is housed in the MOTOR
write for illust. Fact Folder
Sethco Mfg. Co.
2292 Babylon Tpk., Merrick, N. Y.

For more data circle **385** on Postpaid Card

This small unit is built so that the plating or burnishing cylinder lifts on and off the drive shaft without fastening or unfastening. The hinge-mounted drive is adjustable for plating with the cylinder in the oblique position or burnishing with the cylinder in horizontal position.



Belke Lab Plater

Various sizes of plating and burnishing cylinders are available. Literature on request.

Manufacturer: Belke Manufacturing Co., 947 N. Cicero Ave., Chicago 51, Illinois.

For more data circle **456** on Reader Service Card

★ ★ ★

Spray Booth Lining Fabric

A near-permanent lining material for spray booths recently introduced by the Du Pont Fabrics Division makes it possible to strip off accumulated overspray paint without removing the liner.

The liner is "Armalon" TFE fluorocarbon coated glass fabric. It is bonded to the sides of the booth with "Fairprene" No. 5140 cement.

Paint adheres loosely to this fabric, the company states, and large sheets of it can be removed easily with the hands. Accumulated paint can be removed from the fabric repeatedly for an indefinite period of time.

Manufacturer: Fabrics Div., E. I. du Pont de Nemours & Co., Room D-7029, Wilmington 98, Del.

For more data circle **457** on Reader Service Card

★ ★ ★

For more data on any product, circle numbers on Postpaid Card opposite this page →

MARCH, 1959

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3	19	35	51	67	83	99	115	131	147	303-4th Cov.	332	348	364	380	396	412	428	444
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9	25	41	57	73	89	105	121	137	153	309	322	338	354	370	386	402	418	434	450
10	26	42	58	74	90	106	122	138	154	310	323	339	355	371	387	403	419	435	451
11	27	43	59	75	91	107	123	139	155	311	324	340	356	372	388	404	420	436	452
12	28	44	60	76	92	108	124	140	156	312	325	341	357	373	389	405	421	437	453
13	29	45	61	77	93	109	125	141	157	313	326	342	358	374	390	406	422	438	454
14	30	46	62	78	94	110	126	142	158	314	327	343	359	375	391	407	423	439	455
15	31	47	63	79	95	111	127	143	159	315	328	344	360	376	392	408	424	440	456
16	32	48	64	80	96	112	128	144	160	316	329	345	361	377	393	409	425	441	457

NAME_____ POSITION_____

COMPANY_____

STREET_____

CITY_____ ZONE____ STATE_____

PRODUCTS MANUFACTURED_____

Circle numbers (NOT PAGE NUMBERS) to request information

MARCH, 1959

1	17	33	49	65	81	97	113	129	145	301-2nd Cov.	330	346	362	378	394	410	426	442
2	18	34	50	66	82	98	114	130	146	302-3rd Cov.	331	347	363	379	395	411	427	443
3	19	35	51	67	83	99	115	131	147	303-4th Cov.	332	348	364	380	396	412	428	444
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6	22	38	54	70	86	102	118	134	150	306	319	335	351	367	383	399	415	431	447
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8	24	40	56	72	88	104	120	136	152	308	321	337	353	369	385	401	417	433	449
9	25	41	57	73	89	105	121	137	153	309	322	338	354	370	386	402	418	434	450
10	26	42	58	74	90	106	122	138	154	310	323	339	355	371	387	403	419	435	451
11	27	43	59	75	91	107	123	139	155	311	324	340	356	372	388	404	420	436	452
12	28	44	60	76	92	108	124	140	156	312	325	341	357	373	389	405	421	437	453
13	29	45	61	77	93	109	125	141	157	313	326	342	358	374	390	406	422	438	454
14	30	46	62	78	94	110	126	142	158	314	327	343	359	375	391	407	423	439	455
15	31	47	63	79	95	111	127	143	159	315	328	344	360	376	392	408	424	440	456
16	32	48	64	80	96	112	128	144	160	316	329	345	361	377	393	409	425	441	457

NAME_____ POSITION_____

COMPANY_____

STREET_____

CITY_____ ZONE____ STATE_____

PRODUCTS MANUFACTURED_____

FIRST CLASS
PERMIT No. 1702
CINCINNATI, OHIO

BUSINESS REPLY MAIL
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Products Finishing

431 MAIN ST.

CINCINNATI 2, OHIO

Your Monthly Source For Finishing Ideas

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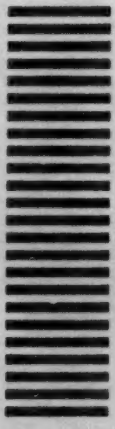
CINCINNATI 2, OHIO



PRODUCT LITERATURE

45. Clean Plating Solutions
Catalog describes Alsop filtration units for removing impurities from plating solutions. Alsop Engineering Corp., 1401 Keen St., Milldale, Conn.

46. Cut Anode Waste
Information on reducing waste of costly anodes by purifying plating baths with activated carbon so as to reduce rejects. Chemicals Div., Atlas Powder Co., Wilmington 99, Del.

47. Felt Polishing Products
A 12-page booklet describes felt wheels, tells about typical applications; has table to aid in selection of felt wheels; table of specifications; directions for setting up and caring for felt wheels; maintenance "do's" and "don'ts"; other useful data. Bacon Felt Co., 447 W. Water St., Taunton, Massachusetts.

48. Paint Stripper
Brochure gives complete details on Epoxystrip, a paint stripper formulated to remove tough finishes easily. Beck Equipment Co., 3350 W. 137th St., Cleveland 11, Ohio.

49. Plating Racks
Illustrated bulletin on Thinker Boy plating racks, which are made of stock insulated parts that assemble with a leakproof seal. Belke Manufacturing Co., 947 N. Cicero Ave., Chicago 51, Ill.

50. Bronze Powders
Color card shows 33 colors of bronze-like finishes that can be produced from stock Cres-Lite bronze powders. Crescent Bronze Powder Co., 118 W. Illinois St., Chicago 10, Ill.

51. Drying and Baking Booklet
Data Booklet D117 shows how heating units and ovens of all sizes and shapes can be built at low cost from prefabricated interlocking infrared sections. Dry Clime Lamp Corp., Greensburg, Indiana.

52. Finishing Systems
Twelve pages of information on the company's finishing systems and components for finishing systems. Includes information on ovens, furnaces, air-supply systems, special mechanical handling systems, spray booths, dust collectors. Granco, Inc., 317 32nd St., S.W., Grand Rapids 8, Mich.

53. Used Polishing Equipment
Information on used buffing and polishing machines. J. Holland & Sons, Inc., 485 Keap St., Brooklyn 11, N. Y.

54. Tack Cloth
Information on specially treated cloths that are used for removing dust and lint just prior to paint finishing operations. Mard Products, Inc., 1020 E. Ten Mile Rd., Hazel Park, Mich.

55. Degreasers
Catalog describes laboratory, two-dip, three-dip, vapor-spray, barrel-type automatic, and semi-automatic degreasers. Mechanical Process Co., Inc., 392 Valley St., South Orange, N. J.

56. Finishing Systems
Bulletin shows typical integrated complete systems for applying organic coatings. Includes description of products being coated, the process used and specifications for the system. Michigan Oven Co., 431 Brainard Ave., Detroit 1, Mich.

57. Paint Mixer
Data sheet on Miracle paint rejuvenators, which mix paint without removing the lid from the container, by shaking the can vigorously. Miracle Paint Rejuvenator Co., 500 N. Robert St., St. Paul 1, Minnesota.

58. Centrifugal Dryer
Four-page folder gives complete details on the Model 20 New Holland Kreider centrifugal dryer. New Holland Machine Co., Dept. PF, New Holland, Pa.

59. Metal Preparation Products
Literature describes products for cleaning, rust removal, phosphatizing, conversion coating and cold forming. Neilson Chemical Co., 2302 Gainsboro, Detroit 20, Ferndale, Mich.

60. Clear Lacquers
Data on clear lacquers especially formulated to be used in protecting highly polished metals and those that tarnish easily. Randolph Products Co., Carlstadt, New Jersey.

61. Weather Testing Service
Data sheet describes company's scope of activities, facilities, special services. South Florida Test Service, 4301 N.W. Seventh St., Miami 44, Florida.

62. Aerosol Finishes
Booklet entitled "Aerosols Unlimited" describes aerosol-packaged paints. Sprayon Products, Inc., 2077 E. 65th St., Cleveland 3, Ohio.

63. Liquid Buffing Compound
Data sheet points out the advantages of using Liquispray in cost savings and increased efficiency and quality. The Stutz Co., 4410 Carroll Ave., Chicago 24, Ill.

64. Clear Semi-Gloss Lacquer
Information on Agateen No. 2B semi-gloss lacquer. Agate Lacquer Mfg. Co., Inc., 11-13 43rd Rd., Long Island City, New York.

65. Cleaning Machinery
Information on the company's line of mechanical washers. B & S Fabricators, Inc., 29125 Groesbeck Highway, Roseville, Michigan.

66. Chromic Acid
Information on BFC chromic acid. Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J.

67. Degreasing Solvent
Information on Blacosolv degreasing solvent. Dept. 104-1, G. S. Blakeslee & Co., 1844 S. Laramie Ave., Chicago 50, Illinois.

68. Tack Cloth
Literature on treated cloths that pick up dust and lint prior to paint finishing. Bond Chemical Products Co., 2639 N. Clybourn Ave., Chicago 14, Ill.

69. Rhodium Plating Instructions
Handy pocket-sized booklet gives complete instructions for rhodium plating, includes data on solution preparation, work preparation, temperatures and current densities, tanks, anodes, and so on. Sigmund Cohn Mfg. Co., Inc., 121 S. Columbus Ave., Mount Vernon, N. Y.

70. Pressure-Sensitive Tape Dispenser
Bulletin No. 525 tells about the Brady Tapematic, an electrically operated machine that will dispense masking tape, labels, pre-cut masks, automatically. W. H. Brady Co., 727 W. Glendale Ave., Milwaukee 9, Wisconsin.

71. Complete Finishing Systems
Catalog No. 200 describes company's design, fabrication and installation services for complete finishing systems. Includes information on equipment for pre-paint treatment, paint application, paint drying and baking, make-up air and exhaust systems. Contains descriptions of typical installations and detailed information on individual components. Cincinnati Cleaning & Finishing Machinery Co., 2008 Hageman St., Cincinnati 41, Ohio.

72. Filters for Electroplating
Bulletin GEO-508 is entitled "A New Concept of Electroplating Filtration." It explains how Fulflo filters with Honeycomb filter tubes provide tank turnover up to three times per hour. Includes description of new stainless steel filter. Commercial Filters Corp., 2 Main St., Dept. PF, Melrose 76, Mass.

73. Aluminum Etchant
Technical data sheet on Cowles AK tells how this formulation works on all aluminum alloys, prevents build-up of scale by means of a special sequestering agent. Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

74. Methylene Chloride
Information on methylene chloride, for use in paint and varnish removers and for cold cleaning. Dow Chemical Co., Midland, Mich.

75. Spray-Mask Painting Machine
Information on a spray-mask painting and mask-washing machine that requires no spray booth, is useful for painting small parts in as many as three colors. Dumatic Devices, Inc., 22833 Dequindre, Hazel Park, Mich.

76. Electropolishing Stainless Steel
Literature on baths for electropolishing stainless steel includes operating instructions for two of these baths. Electro-Glo Co., 621 S. Kolmar Ave., Chicago 24, Ill.

77. Laboratory Equipment Catalog
Catalog lists laboratory instruments, tells what each will do. Includes instruments for measuring color, reflectance, gloss, haze; viscosity, consistency, oil-testing; heating and cooling baths; humidity and salt spray cabinets; film applicators; film-thickness gages; tensile-strength gages; instruments for measuring drying time, hardness, flexibility, adhesion, washability; mills, mixers, stirrers; centrifuges; lab ovens; thermometers, hygrometers; drum tools, drum warmers, many others. Gardner Laboratory, Inc., Bethesda 14, Md.

78. Buffs
Folder describes company's line of buffs: bias-type cloth, sisal, cloth uniflex, others. Garfield Buff Co., 6 Clinton Rd., Caldwell, N. J.

79. Immersion Heaters
Bulletin describes and gives specifications for acid- and alkali-resistant quartz immersion heaters. Glo-Quartz Electric Heater Co., Inc., Willoughby, Ohio.

80. Abrasive Belt Polishing Machines
Bulletin 337-T describes several models of abrasive belt grinders, buffers, polishers, tells what each machine will do, its advantages, general specifications. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

81. Plating Course
Information on a correspondence course in electroplating. Joseph B. Kushner Electroplating School, P. O. Box 2066, Station "D," Evansville 14, Indiana.

82. Baking and Drying Equipment
Catalog No. 560 describes and illustrates various types of baking and drying equipment. The Lanly Co., 2800 Euclid Ave., Cleveland 15, Ohio.

83. Tumbling and Burnishing Products
A 10-page booklet shows various types of burnishing barrels, tumbling barrels, burnishing materials, tumbling abrasives. Chas. F. L'Hommedieu & Sons Co., 4521 Ogden Ave., Chicago, Ill.

84. Pearlescent Finishes
Information on Nacromer YNC, an additive that is used in standard organic finishes to produce a pearlescent finish. The Mearl Corporation, 124 E. 40th St., New York 16, N. Y.

85. Drum-Handling Tools
Literature on a line of drum-handling tools and equipment: drum upenders, drum wrenches, carts and so on. Morse Mfg. Co., Inc., 762 W. Manlius St., E. Syracuse, N. Y.

86. Vacuum Coaters
An eight-page catalog includes sections on principles of the vacuum coating process; production steps; applications; economics; and equipment. NRC Equipment Corporation, a Subsidiary of National Research Corporation, 160 Charlemont St., Newton Highlands 61, Mass.

87. Paint Test Panels
Form No. A7310 describes phosphatized test panels made under carefully controlled conditions to assure uniformity for use in testing paints. Parker Rust Proof Co., 2172 E. Milwaukee Ave., Detroit 11, Mich.

88. Plating Room Floor Coating
Bulletin CP-627 tells about Penntrowel, a surfacing material that protects floors against acids and corrosives. Pennsalt Chemicals Corporation, Dept. 680, Natrona, Pa.

89. Industrial Gloves
Industrial glove catalog lists and describes many different types of gloves. Pioneer Rubber Co., 285 Tiffin Rd., Willard, Ohio.

90. Electrostatic Hand Gun
A 4-page folder tells how the new Ransburg hand-held electrostatic spray gun works, what it will do. Includes photos and diagrams of the new gun. Ransburg Electro-Coating Corp., P. O. Box 7822, Indianapolis 23, Indiana.

91. Oven Guide
Catalog No. 122 serves as a guide for selecting the right oven to bake, dry and cure paint, varnish, lacquer and enamels. W. S. Rockwell, 2028 Eliot St., Fairfield, Conn.

92. Temperature Control
Bulletin 1025-B describes temperature controllers that hold solutions at pre-set temperatures automatically. Sarco Co., Inc., 635 Madison Ave., New York 22, New York.

93. Bias Buffs
Information on the advantageous features of Schaffner bias buffs. Schaffner Manufacturing Co., Inc., Schaffner Center, Emsworth, Pittsburgh 2, Pa.

94. Precious Metal Plating Equipment, Supplies
Catalog No. CHP gives details on equipment, solutions and processes for depositing precious metals. Sel-Rex Corporation, Nutley 10, N. J.

95. Filter Pump Units
Bulletin 103 contains complete data on Sethco filter pumps for removing solids from acid and alkaline solutions. Sethco Mfg. Co., 2292 Babylon Turnpike, Merrick, L. I., N. Y.

96. Technical Data on Hot Spray
Revised edition of the booklet "Why Hot Spray?" includes technical information on the advantages and possibilities of hot spray painting process. Spee-Flo Co., 6614 Harrisburg, Houston 11, Texas.

97. Spray Nozzle Catalog
Catalog No. 24 is a 48-page booklet containing complete data on various spray nozzles and accessories. Nozzles are listed in tabular form and complete information is given on pipe sizes, external dimensions, orifice diameters, capacities and spray angles. Spraying Systems Co., 3229 Randolph St., Bellwood, Ill.

98. Buffing Compositions
A 16-page booklet on polishing and buffing compounds contains useful data on how to test compositions in the plant; tables that give recommended compositions for use on plated or unplated surfaces; a peripheral speed chart; details on specific compositions. Frederic B. Stevens, Inc., Detroit 16, Mich.

99. Zinc Plating Additive
Data on Zinc Brite, a cleansing and purifying agent for cyanide zinc plating solutions. Sulphur Products Co., Inc., 621 W. Pittsburgh St., Greensburg, Pa.

100. Silicon Rectifiers
Illustrated brochure tells about the advantages of silicon rectifiers. Syntron Co., 452 Lexington Ave., Homer City, Pa.

101. Etch Primer
Data on Gripalloy, an etch primer available in black and colors. Used as primer or finish coat. Tenax, Newark 5, N. J.

102. Cob Grits for Blasting, Tumbling
Information on corn cob grits that are used as tumbling media and in blast cleaning. Ti-Co Industries, Inc., P. O. Box 185, Tipton, Indiana.

103. Brass Plating Solution
Technical bulletin on True Brite brass solution, which is available in a variety of colors. True Brite Chemical Products Co., Box 31, Oakville, Conn.

104. Copper Anodes
Information on "Phosphor-Brite" rolled copper anodes for acid copper plating baths. Univertical Foundry and Machine Co., 14841 Meyers Rd., Detroit 27, Mich.

105. Plating Brighteners
Data file on the company's line of "chemically different" plating brighteners. Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Maryland.

106. Prepaint Conversion Coatings for Aluminum
Bulletin 1424 A describes the uses of Amchem Alodine, a chemical conversion coating that forms an amorphous coating which becomes an integral part of the metal, improves corrosion resistance and paint bond. Amchem Products, Inc., Ambler, Pa.

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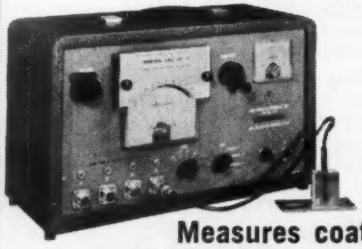

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107. Electrocleaner
Information on Apex "Electro 100" cleaning compound, a general-purpose low-current-density electrolytic cleaner. Apex Alkali Products Co., Main & Rector Sts., Philadelphia 27, Pa.

108. Plastic Fans
Bulletin No. 9-20 describes corrosion-proof rigid plastic centrifugal fans. These fans are made of polyvinyl chloride, which has excellent resistance to chemicals and good strength-to-weight ratio. Atlas Mineral Products Co., Mertztown, Pa.

109. Air-Wash Systems
Bulletin No. 256 describes acid-proof air washers for removing fumes and corrosive gases from exhaust air. Tells how these units work, lists materials of construction and accessories that are available. Automotive Rubber Co., Inc., 12550 Beech Rd., Detroit 39, Mich.

110. Coatings for Sheet Metal
Folder lists company's products for finishing sheet metal: red primers, coil coatings, metal-decorating paints, textured vinyl coatings, primers and top coats for vacuum metallized products, alkyd baking enamels. Gordon Bartels Co., Rockford, Ill.

111. Fused-Quartz Immersion Heaters
A four-page folder describes Clepco fused-quartz immersion heaters for difficult acid heating jobs. Includes specification tables, photos of typical installations, list of features, application data, information on controls and operating costs. Cleveland Process Corp., 1965 E. 57th St., Cleveland 3, Ohio.

112. Automatic Spray Painting
Bulletin A96-1 tells how the Binks Memory Timer automates finishing operations without use of complex equipment. Binks Manufacturing Co., 3118-40 W. Carroll Ave., Chicago 12, Ill.

113. Design Data for Lateral Tank Ventilation
Bulletin dt-7 contains 37 pages of useful information on processes and equipment for removing fumes from tanks used in acid pickling, alkaline cleaning, electroplating, dipping and hot rinsing. Includes tables for use in selecting the proper bifurcator; discussion of ventilating problems; diagrams of various types of exhaust and duct systems; descriptions and illustrations of company's line of fans and ventilators. DeBothezat Fans Div., American Machine and Metals, Inc., Dept. PF, East Moline, Ill.

Circle numbers on postpaid card opposite page 128 to obtain free literature

114. Special Spray Equipment
Spray equipment required to apply Glid-Tile, a tile-like polyester finish, is listed and described in catalog sheet M-1052. The finish is said to provide appearance comparable to ceramic tile. This catalog lists the spray guns, tanks, compressors and accessories that have been tested and proved for this application. DeVilbiss Co., Toledo 1, Ohio.

115. Guide to Silicone Products
The 1959 Reference Guide to Dow Corning Silicones describes what silicones can best solve a variety of problems, contains examples of applications where Dow Corning Silicones are currently being used, includes index to more than 150 silicone products now commercially available. Dow Corning Corporation, Midland, Mich.

116. Copper-Brass Treatment
Ebonol "C" improves adhesion of almost every type of coating applied to copper or brass surfaces. It forms thousands of black oxide needles on the surface of the metal, which aid in bonding the paint or other coating to the surface. Also improves corrosion resistance. Complete details available from the manufacturer. Enthone, Inc., 442 Elm St., New Haven 11, Conn.

117. Fusion-Bonded Hard Finish
An eight-page folder describes company's service of "Fusecoating," a process for fusion bonding of tungsten carbide to a base metal with a hard alloy binder metal. Includes information on shapes that can be coated, base metal limitations, applications, and Fusecoating of buffing fixtures. Fusion Metal Coating Co., 25493 W. Eight Mile Rd., Detroit 19, Mich.

118. Spray Painting Equipment
A catalog of spray painting equipment includes details on cup guns, Redi-Sprays (for spraying multi-color paints and enamels from original 1-5 gallon shipping pails), direct-supply spray units, circulating paint systems and the Graco Hydra-Spray (for spraying paints without the use of atomizing air). In addition, there is a complete selection of spray painting accessories and hoses. Power-flo Catalog "Section A." Gray Company, Inc., 1027 Sibley St., N.E., Minneapolis 13, Minn.

119. Spin Finish
Information on the Spin Finish method of deburring and finishing fixtured parts in a loose abrasive media. Grav-I-Flo Corp., Dept. PF, 400 Norwood Ave., Sturgis, Mich.

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120. Nickel Stripper
Technical data on Ni-Plex, a new stripper that removes nickel or cadmium quickly from the surface of steel, copper, brass, silver or aluminum. Hanson-Van Winkle-Munning Co., Matawan, New Jersey.

121. Duplex Nickel
Literature on the Harshaw Perflow-Perglow Duplex nickel plating process. Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio.

122. Degreaser
Data sheet 814 tells about metal degreasing grade of Nialk trichlorethylene, which now meets specs for flushing missile and rocket components. Hooker Chemical Corporation, 1401 Union St., Niagara Falls, N. Y.

123. Tumbling Shape
Technical booklet on Honite Brand C-R Tumbling Shape tells how this truncated triangular pyramid reaches inaccessible workpiece areas, improves barrel finishing results. Minnesota Mining & Manufacturing Co., Dept. FI-39, 900 Bush Ave., St. Paul 6, Minn.

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124. Powdered Acidic Descaler, Deruster
Oakite Service Report B-6564 describes Oakite Drycid, an inhibited acidic descaler and deruster in powder form, includes information on how to apply Drycid. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

125. Wet Blasting
Instruction manual on the pressure blast wet blasting process. Pressure Blast Mfg. Co., Inc., 33 Pleasant Ave., Manchester, Conn.

126. Solvents
Information on acetates, alcohols, aliphatic hydrocarbons, alkanolamines, aromatic solvents, chlorinated hydrocarbons, glycols and polyglycols, glycol ether, other solvents. The Solvents and Chemicals Group, 2540 West Flournoy St., Chicago 12, Ill.

127. Finishing Systems
A 36-page book describes and illustrates complete finishing systems and components such as washers, dryers, bake ovens, flow coat systems, dip-painting systems, spray painting systems, others. Includes diagrams of several systems, comparison of operating costs for Spra-Con systems vs. other types. Also has a page of useful engineering formulas and constants. The Spra-Con Company, 3600 Elston Ave., Chicago 18, Ill.

128. Industrial Nozzles
Catalog contains 32 pages of listings and data on nozzles for industrial applications. Specific data on spray angles, dimensions, types of connections, capacity vs. pressure for standard nozzles. Wm. Steinen Mfg. Co., Industrial Nozzle Div., 45 Bruen St., Newark 5, N. J.

129. Immersion Heaters
Steel, stainless steel and translucent-fused-quartz immersion heaters are described and illustrated in a bulletin that includes information on Vapo-Vent, a venting system designed to prevent explosions, and Neo-Tite, a sealing system that prevents damage in case of accidental immersion of the entire assembly. N. J. Thermex Co., Inc., 537 Bergen St., Harrison, N. J.

130. Plastic Pump
Details on the Vanton sealless plastic pump, which resists plating corrosives, has no stuffing boxes, shaft seals, valves or gaskets, no metal parts in contact with the fluid being pumped. Vanton Pump and Equipment Corp., Hillside, New Jersey.

131. Buffing Compound Remover
Literature describes Bufsol, a cleaner specifically formulated for removing stubborn buffing compounds in preparation for plating or other subsequent operations. Wyandotte Chemicals Corp., Wyandotte, Mich.

132. Belt Conveying Systems
Bulletin describes and illustrates A-F Engineered Belt Conveying Systems. Includes photos of installations showing typical applications. Alvey-Ferguson Co., 656 Disney St., Cincinnati 9, Ohio.

133. Reduce Plating Waste
Catalog 127-A illustrates a complete line of water demineralizers, presents information that can help to reduce waste and save money. Barnstead Still & Demineralizer Co., 12 Lanesville Terrace, Boston 31, Mass.

134. Degreasers
Bulletin OP2 gives complete information on the company's line of degreasers. Circo Equipment Co., 51 Terminal Ave., Clark (Rahway) N. J.

135. Carbonate Removal
Bulletin tells how to remove carbonates from cyanide plating solutions. Electrochemicals Dept., E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Del.

136. Automatic Spray Gun
Two-page folder describes the Auto-Rod, an automatic air-operated spray gun. Eclipse Air Brush Co., 381 Park Ave., Newark 7, N. J.

137. Buffs
Information on Zip-Tip buffs for flat or irregular surfaces. Formax Mfg. Corp., Detroit 7, Mich.

138. Lab Ovens
Data sheet describes new features of recently introduced constant-temperature laboratory oven, Model No. LO-200C. Grieve-Hendry Co., Inc., 1414 W. Carroll Ave., Chicago 7, Ill.

139. Metal-Treatment Materials
New folder describes company's line of black oxide finishes, chromate coatings, cleaners, oils and strippers. Heatbath Corp., Springfield 1, Mass.

140. Rinse Aid
Information on Rins-Aid, an additive for rinse water. It prevents staining and tarnishing and hastens drying. R. O. Hull & Co., Inc., 1304 Parsons Ct., Rocky River 16, Ohio.

141. Washing Machine Cleaners
A comprehensive line of cleaners designed for use in power spray washing machines is fully described in Technical Data Sheet No. 7, a five-page usage and instruction sheet. Free-rinsing, nonfoaming and of maximum detergency, this group of cleaners covers a wide range of variables, such as basis metal, type of soil, water, time, temperature, pressure and volume of solution. MacDermid, Inc., Waterbury 20, Conn.

142. Electrocleaners
Information on Magnus electrocleaning products. Magnus Chemical Co., Inc., 208 South Ave., Garwood, N. J.

143. Compounds for Barrel Processing
"Permag Compounds for Barrel Processing" is the title of a manual that gives basic information on barrel processing compounds, specific data on deburring and roughing, coloring and burnishing, descaling, rust prevention, neutralizing, other topics. Includes methods for calculating volumes of barrels, notes from case histories. Magnuson Products Corp., 50 Court St., Brooklyn 1, N. Y.

144. High-Vacuum Equipment
A 16-page product summary and price list describes a complete line of high-vacuum equipment, components and systems, including vacuum coaters, leak detectors, impregnating equipment, other products. NRC Equipment Corporation, 160 Charlemont St., Newton 61, Mass.

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145. Preparing Aluminum for Plating
Data on Alkalume Pre-Plate, a zincate bath used to prepare aluminum for plating. Northwest Chemical Co., 9310 Roselawn Ave., Detroit 4, Mich.

146. Protect Polished Parts
Folder shows typical applications of Neotex neoprene rubber mesh matting, a protective cover or liner for baskets, tables, benches and so on — wherever delicate or easily marred parts are being processed. Research Products Corp., Dept. 76, Madison 10, Wisconsin.

147. Wet Blast Finishing
Finishing by the wet blast method is the subject of Bulletin 100. Illustrates and describes applications of Wheelabrator Liquimatte Model 43 wet blast equipment. Techline Div., Wheelabrator Corp., 1155 Avenue V, Vicksburg, Mich.

148. Alkaline Derusting, Descaling
Bulletin PR-AD-1 describes the use of periodic reverse in alkaline derusting and descaling. Unit Process Assemblies, Inc., 61 E. Fourth St., New York 3, N. Y.

149. Copper Anode
Information on the new Asarco-Max copper anode. Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.

150. Epoxy Coating
Information on a pure-bake epoxy coating that cures at 325 deg. F. in five minutes. Specialty Coatings Co., 3501 W. Jarvis, Skokie, Ill.

151. Wood Tanks
Information on wood tanks for pickling and plating. Kalamazoo Tank & Silo Co., 1571 Harrison St., Kalamazoo, Mich.

152. Durable Metal Finish
Data on Dunal, a coating for metal that withstands boring, grinding, tooling, lapping, burring, milling, without chipping, cracking, marring or peeling. This coating is said to have excellent corrosion resistance, chemical resistance, moisture resistance. J. Landau & Co., 214 Washington Ave., Carlstadt, N. J.

153. Chromium Chemicals
Bulletin 52 contains technical information on chromic acid and other products. Solvay Process Div., Allied Chemical Corp., 61 Broadway, New York 6, N. Y.

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Metals Memos

News about metals and metal products . . .

Alloy Aid

Non-ferrous metals that are "three to four times as strong as conventional metals at high temperatures" have been produced by scientists at the University of Denver. Typical examples are a copper alloy that is three or four times as strong as conventional copper at 1800 deg. F. and an aluminum alloy that is at least three times as strong as conventional aluminum at 1000 deg. F.

The alloys that have these properties so needed in rocket, missile and engine development are basically "mixtures" of ceramics with metals.

Technique for producing them, called "melt saturation," is similar to the classic high school chemistry demonstration in which silver nitrate and hydrochloric acid are dumped together to form a fine suspension of silver chloride. But in this case the materials are copper with thorium dissolved in it, and copper with boron dissolved in it. Researchers dump the two together, form thorium boride, pour into a mold quickly and harden before the thorium boride can settle out.

Processes for use with other non-ferrous metals are similar.

Ductility loss associated with this strengthening is approximately 30 to 40 per cent.

Better Buicks

A hefty increase of 60 per cent in the minimum thickness of nickel specified for bumpers, headlight and taillight rims, grille components and door handles is Buick's contribution to the current drive in the automobile industry to increase the life of the showroom shine on plated parts.

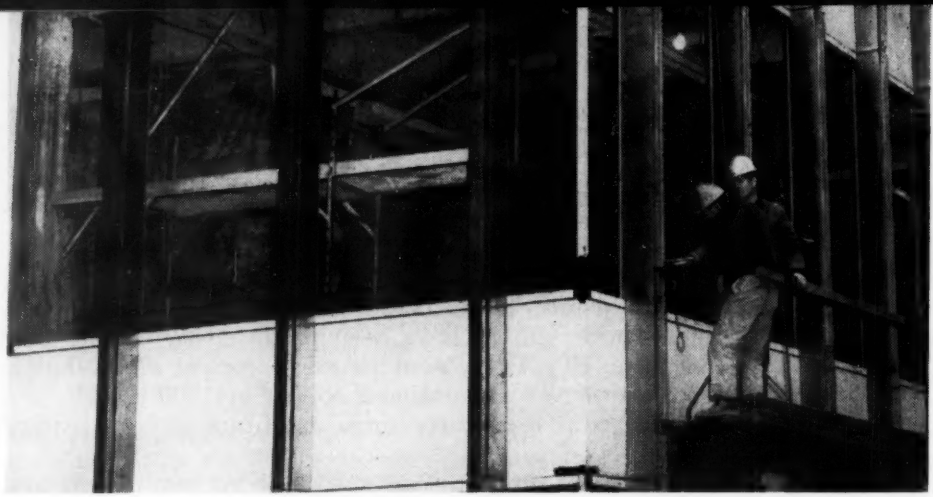
Fastener Faces

If the specification number of the fastener on the bid sheet is familiar, but you just can't quite place the face, a recently published fastener-recognition bulletin may be the answer.

The four-page bulletin lists NAS, AN and MS numbers for more than 70 different bolts, screws, pins and nuts normally specified in aircraft and automotive applications, spot-illustrates each with front-and-side-view sketches, then tells what type of fastener it is. Available from A. W. Scott, Advertising Dept., Box 858, Standard Pressed Steel Co., Jenkintown, Pa.

Black Building

Black stainless steel curtain wall panels—more than 11 acres of them —will be used to sheathe the newest and tallest of the skyscrapers on New York City's Park Avenue.



The Union Carbide Building, now under construction, will be the first to use the black matte-finished stainless steel panels. Black finish is applied by the Pemyron process, a new method of applying a permanent color to the surface of metals. The process was developed by Union Carbide Metals Co., a division of Union Carbide Corporation.

The black panels are white during the construction operations because they are protected by a strippable plastic coating, which will be removed after workers have completed the exterior work.

Coming Up: Profitable Reading

Articles to be published in coming monthly issues of PRODUCTS FINISHING:

An Effective Protective Coating for Molybdenum
Plated coating protects molybdenum from high-temperature oxidation.

Cathodic Protection of Steel in Salt Water
National Bureau of Standards reports on the optimum electric potential required for protecting steel from salt-water corrosion . . .

Finishing Chevrolet Hoods and Fenders
Painting processes used to finish fenders and hoods include careful metal preparation, flow coating of primer, spray application of finish coats and polish-buffing of final finish to a high luster . . .

Barrel Enameling
Step-by-step recommendations for barrel painting: type of barrel, speed, type of paint, quantities of parts and paint, other variables . . .

Watch for these and other useful articles in PRODUCTS FINISHING, the Finishing Industry's most informative publication!

News of the Finishing Industry

- company news
- new positions
- new plants
- meetings

NEW PLANTS

Wyandotte Chemicals Buys Tesco Chemicals' Atlanta Plant

Wyandotte Chemicals Corporation has purchased the Atlanta plant of Tesco Chemicals, Inc. The purchase includes Tesco's line of Tes-Ted cleaning products.

Tesco will continue its operations in a new location in the Atlanta area and will continue to operate its plants in North Carolina and Florida.

Wyandotte's J. B. Ford Division will manufacture its complete line of metal cleaners, maintenance chemicals and related products in the Atlanta plant as soon as expansion of the facilities is completed.

Fiore Opens Job Painting Plant in Brooklyn, New York

William M. Fiore, Inc., has opened a new 8,000-square-foot plant at 269-41st St., Brooklyn, N. Y. The new facility is equipped to perform such services as spray painting, stamping, screening and assembly.

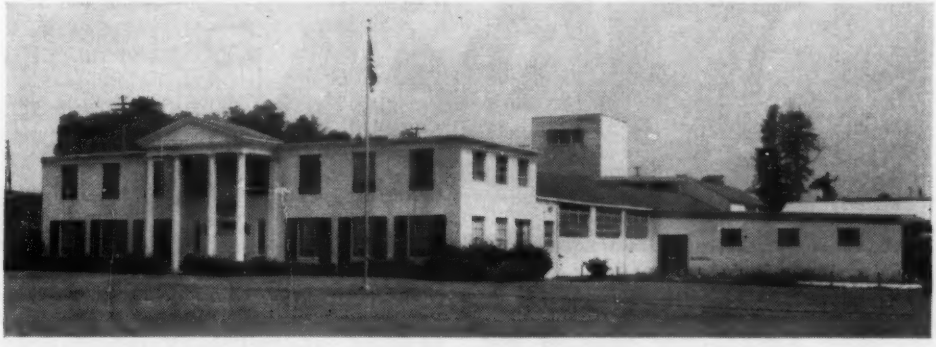
The company's complete stock of jigs, fixtures and automatic spray and assembly equipment will make it possible for the new plant to handle complicated multi-color work required for advertising displays, name plates, decorative trim and novelties, company officials state.

What Color Is It? Interchemical Color Center Seeks Answers

Color sells. Countless market studies prove that the attractively decorated product sells faster than a drab competitive product that is equal in every other way.

That's why manufacturers have become so color conscious. It also explains the increase in color-matching and color-selection problems. "Close" and "normal variation" just aren't good enough any more.

To solve some of the problems that finishers and other people who work



New Plant recently acquired by Wyandotte Chemicals Corporation in Atlanta, Georgia.

with color face daily, Interchemical Corporation has opened a new Color Center at the company's Central Research Laboratories in New York City. The new center will aid Interchemical's own divisions, help customers and technical societies on color problems, conduct basic research on improved techniques for color matching and establishing color standards and tolerances.

A lighting system in the Center that will produce anything from north sky daylight to supermarket fluorescent illumination with the flick of a switch helps color workers to see how their products will look under varying conditions, aids in avoiding colors that won't be attractive in the setting where they'll be used. It's one of the many new devices that technicians at the Center will use to solve color problems.

Director of the Center is F. L. Wurzburg, Jr., 25-year veteran of work in color. "We expect to spend as much time at the Center correcting misconceptions about color," he explains, "as supplying new information on the subject. The Center is equipped to provide a real education on color for our customers and our own people, too. In both the literal and figurative sense, it will help to sell color."

New Company to Specialize in Plating for Electronics Industries

A new company recently formed in Waltham, Mass., will specialize in plating of precious metals for electronics and related industries. Name of the new company is Plating for Electronics, Inc.

Fred R. Davino, founder and president of the new company, says the company's new facilities, which were

Using special lighting and a magnetic blackboard, Color Center Director F. L. Wurzburg, Jr., (right) discusses color variations with (from left) Robert Cleary, Alfred Di Bernardo and Dudley Head of Interchemical Corporation and Maurice Welt of Crafton Graphic Company, Inc. Switchboard controlling six-stage illumination system is below blackboard.

Some of the equipment for plating recently installed by Plating for Electronics, Incorporated.

recently installed by M. E. Baker Co., Cambridge, Mass., will be used primarily for precision plating to specifications of such metals as gold, silver and rhodium. The company is also equipped to do anodizing and for plating of copper, cadmium and nickel.

Hooker Research Center Now Being Occupied

Researchers have moved into Hooker Chemical Corporation's new Research Center facing the west branch of the Niagara River at the north end of Grand Island, N. Y.

Although space is available for about 200 workers, initially 111 people will occupy the 69,000 square foot building. Dedication and formal opening of the Research Center is planned for May.

Several different kinds of research will be conducted in the new facilities. Organic chemical research will include work on organophosphorous compounds, chlorinated products, sulfur compounds and fluorinated materials. This program will also include research on polyesters, alkyd foams and new polymers.

The inorganic chemical research group will work toward the development of inorganic phosphorous materials and an expansion of product lines including chlorine and caustic soda diversification.

Considerable research effort will also be expended in exploring fields completely new to Hooker and, in some instances, new to the entire chemical industry.

Analyzing and Comparing Metal Cleaning Costs

A method for quickly analyzing and comparing metal cleaning costs is contained in a booklet issued by the Du Pont Electrochemicals Department.

By use of standard cost factors contained in the booklet, total hourly cleaning costs can be figured rapidly and with reasonable accuracy by inserting basic operating information into simple formulas.

Possible economies resulting from

the so-called "High-Spot" cost analysis include savings in operating costs of existing cleaning systems as well as selection of the most economical system for new or expanded installations.

Du Pont also has developed a more extensive cost analysis booklet containing detailed information for companies desiring a more comprehensve survey of cleaning costs. Both booklets are available through distributors of "Triclene D" trichlorethylene.

Macarr, Inc. Buys Walker-Norma Hoffman

Macarr, Inc., and Walker Division of Norma Hoffman Bearings Corp. have jointly announced that Macarr received all Walker inventory, engineering data and customer files on November 30, 1958. Existing Walker equipment will be serviced by Macarr, Inc., Bronx, N. Y.

Polymer Corporation Relaxes Licensing Restriction for Fluidized-Bed Coating Process

All purchasers of Corvel fusion bond finishes will automatically be licensed to use the patented fluidized-bed coating process, according to a spokesman for Polymer Corporation's subsidiary, Polymer Processes, Inc., holder of United States' licensing rights. Process rights previously had been limited to selected licensees only.

In the process, a heated object to be finished is moved through a fluidized bed of dry powders, which bond by fusion to the surface of the part. The bed of dry powders, in a state of "whirling suspension," assume flow characteristics that are much like a liquid. No solvents are used. The coatings produced in a single dipping treatment are comparatively heavy—from 0.005 to 0.062 inch.

★ ★ ★

ADVANCE!

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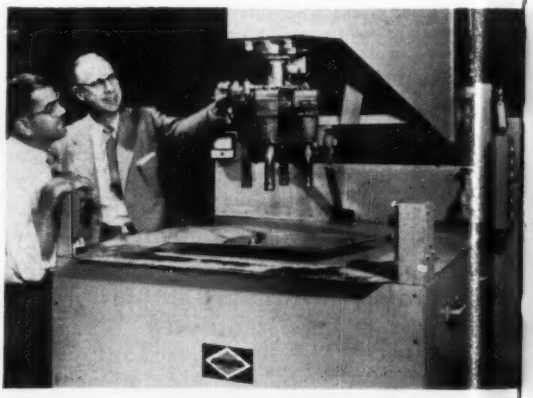

Shown inspecting a recent installation of Abrado-Matic mechanical finishing machine are R. E. Kimmer (left) plant process engineer in large automotive plant, and P. W. Sheppard, Abrado Finish Corporation. The Abrado-Matic finishes fixture-mounted parts by lowering them into rotating tub of abrasives.

MORSE DRUM UPENDER No. 32

Takes the strain and effort out of upending heavy drums. Has 40" handle offset 35° for top efficiency. Hefty 1¼" hook provides clearance for largest chime. 2½" x 8" toe plate spreads lifting pressure over large area to prevent drum damage. Order Several Today!

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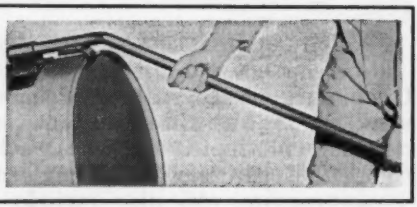

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Norton Displays at Western Metal Show

Norton Company will demonstrate reinforced resinoid abrasive products for use on portable machines in Booth 744 at the Western Metal Exposition, March 16 to 20, in Los Angeles.

Also featured will be grinding wheels for toolroom, surface, centerless and internal grinding machines, and tumbling abrasives for barrel finishing.

Part of the Norton exhibit will be devoted to new, non-abrasive products, including ceramic tool bits, wear resistant ceramics, refractories, Rokide ceramic spray coatings and products for nuclear applications.

Crown Rheostat Appoints Gumm Distributor

Crown Rheostat & Supply Company has appointed Frederick Gumm Chemical Company as distributor for Crown fully automatic plating equipment, tumbling equipment, and miscellaneous items.

The agreement covers the New England states and New York, Pennsylvania, New Jersey, Delaware and Maryland.

Howard Martin, the general sales manager of F. Gumm Chemical Company, will direct the sales organization from the home office in Kearny, N. J. Resident representatives of the F. Gumm Company will staff the several district areas.

Ed Jeveley, Boston, serves Massachusetts. J. M. Barry and J. C. Barry, New Haven, will cover Connecticut. Al Fusco and Sid Boyer will cover metropolitan New York, and Louis Marino, New Jersey. Vincent Caswell, Philadelphia, will cover Pennsylvania. Charles Clark, Rochester, will cover western New York State, and Foster Applegate, Syracuse, will cover east central New York State.

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New Positions . . .

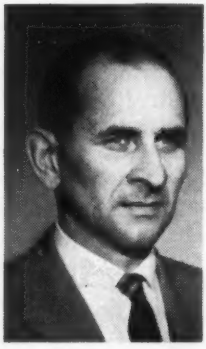
R. M. Wilson

J. Donald Burvee

J. David Hopkins

Jean J. Grunwald

A. J. Hebsacker



R. B. Preston

Jean J. Grunwald named research chemist by **MacDermid, Incorporated.**

★ ★ ★

Pioneer Rubber Company's Industrial Products Div. appointed **J. Donald Burvee** to represent company in western Missouri, Kansas, Oklahoma, south Wyoming and Colorado, and **R. M. Wilson** to sell industrial gloves in Texas and New Mexico . . .

★ ★ ★

Detrex Chemical Industries, Inc., promoted **A. J. Hebsacker** to regional supervisor, Chemical Processing Div., **R. B. Preston** to manager of national accounts . . .

★ ★ ★

J. David Hopkins named general sales manager of **Delavan Manufacturing Company** . . .

J. D. Rogers and **R. A. Nederman** named technical service representatives for **Oakite Products, Inc.,** in Houston and Kansas City, respectively . . .

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Arthur E. MacQuilkin

Stuart C. Ruppel

Max B. Roosa

Francis A. E. Spitzer

Arthur E. MacQuilkin appointed executive vice president and general manager of **Industrial Filter & Pump Manufacturing Co.** . . .

★ ★ ★

Stuart C. Ruppel appointed sales engineer for Cleveland territory, **The Udylite Corporation** . . .

★ ★ ★

Norton Behr-Manning Overseas, Inc., has named **Frank M. Ryan** vice president and general manager, **Fordyce B. Scott** vice president in charge of sales of Behr-Manning tape and coated abrasive products, and **Louis J. Camarra** vice president in charge of sales of abrasive and refractory products . . . Other Norton promotions include **Donald L. Price** to vice president, **Robert Cushman** to sales manager, grinding wheels, **Harry G. Brustlin** to manager of marketing services, **Sidney B. Wetherhead** to Pacific Coast district manager . . .

Max B. Roosa elected to the board of directors, **Parker Rust Proof Co.** . . .

★ ★ ★

Francis A. E. Spitzer appointed president of **International Division of Interchemical Corporation,** succeeding **Joseph G. Morris,** who relinquishes executive position in accordance with company's retirement policies, but continues to serve company on special assignments . . .

★ ★ ★

John W. Nestor promoted to assistant general manager of **Du Pont's** Fabrics and Finishes Department, succeeding **F. H. Mattlage,** who became general manager following retirement of **E. S. Nickerson** on December 31 . . .

★ ★ ★

Edward McLanahan Tittman elected vice president and director of **American Smelting and Refining Co.**

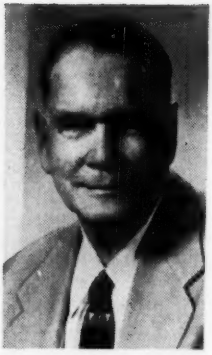
AMERICAN ELECTROPLATERS' SOCIETY
GOLDEN JUBILEE CONVENTION
Fifth International Conference on Electrodeposition and Metal Finishing
Fifth Industrial Finishing Exposition
June 14-19
Detroit Artillery Armory
Detroit, Michigan

New Positions (continued) . . .

Frank Jones

B. Arthur Russell

Charles N. Chalfant



Ferguson Barnes

Frank Jones appointed director of market development for **Michigan Chrome & Chemical Company . . .**

★ ★ ★

B. Arthur Russell elected president and treasurer of **Drying Systems Co., Div. of Thor Power Tool Co.,** succeeding **Buford B. Russell,** who becomes chairman of the board of directors.

★ ★ ★

Pierce & Stevens Chemical Corporation promoted **Herman J. Deney** to vice president in charge of research and **Darwin E. Ellis** to vice president in charge of production . . .

★ ★ ★

Robert C. Kany named representative for **Pennsalt Chemicals Corporation's** line of Corrosion Engineering Products in Florida . . .

★ ★ ★

Wilson B. Green named sales representative by **Techline Div., Wheelabrator Corporation . . .**

Ferguson Barnes appointed southeastern division manager, **Chainveyor Corporation,** will cover Florida, Georgia, Alabama, North Carolina, South Carolina . . .

★ ★ ★

Charles N. Chalfant appointed product manager, Metal Finishing, by **Kelite Corporation . . .**

★ ★ ★

Robert E. Lewis elected president of **Sylvania Electric Products, Inc.,** succeeding **Don G. Mitchell,** who continues as chairman of the board . . .

★ ★ ★

James A. Hughes elected secretary of **Diamond Alkali Company, John A. Wilson** appointed director of law . . .

★ ★ ★

William H. Perks and **Lester A. Hansen** appointed directors of **Behr-Manning Co., a Division of Norton Company . . .**

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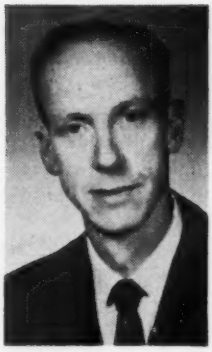
P. J. Calabrese

R. O. Watson

Arthur H. Kirkpatrick



Jerome A. Ryan

R. O. Watson appointed sales engineer for southern Indiana territory by **Northwest Chemical Co.**...

★ ★ ★

P. J. Calabrese promoted to vice president, **Grieve-Hendry Co.**, will remain in charge of sales...

Arthur H. Kirkpatrick appointed to sales engineering staff, **Crown Rheostat & Supply Co.**..

★ ★ ★

Jerome A. Ryan appointed assistant manager of solvent sales, **Chlorinated Products Div., Diamond Alkali Co.**..

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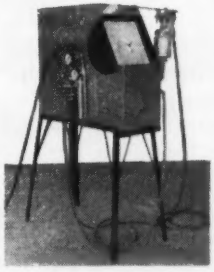

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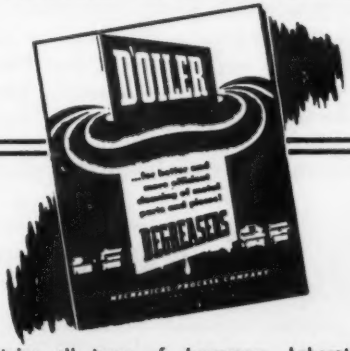

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Shell Chemical Corporation's Industrial Chemicals Div. named **E. S. Robb** manager of manufacturing; **D. L. Yabroff** manager of research and development; **J. W. Hyde,** operations manager; **W. Q. Mooney,** sales manager; **W. A. McCormick,** sales development manager; and **A. V. Snider** product development manager . . .

Fremont L. Scott

Manuel Ben

MEETINGS

A. E. S. Empire State Regional Meeting

The Fifth Annual Empire State Regional Meeting of the American Electroplaters' Society will be held Saturday, April 11, at the Hotel Peter Stuyvesant in Buffalo, N. Y.

Frank W. Rudolph, president of the Buffalo Branch, is general chairman of the meeting.

The educational session will begin at 2:00 P.M. It will be divided into organic finishing and plating sections.

Papers to be presented at the plating section are as follows:

The Role of Stress in the Electrodeposition of Metals, by Laird Newall, president of Henry Souther Engineering Co.

Hard Chromium Plating, by Manuel Ben, supervisor of the Plating Service Section, General Motors Electrochemistry and Polymers Department.

Papers to be presented at the organic finishing section are as follows:

Plastisols and Organosols as Protective and Decorative Coatings, by Fremont L. Scott, research manager of the Organic Division, Research and Development Dept., Metal & Thermit Corporation.

Multicolor Enamels, by Everett W. Linton, sales manager of Duralac Chemical Corp.

Immediately following the two sessions, a film on aluminum made by the Aluminum Company of America will be presented.

Baltimore-Washington Branch A.E.S. Annual Meeting

The Baltimore-Washington Branch A.E.S. will hold its Annual Meeting at the Statler Hilton in Washington, D. C. on Saturday, April 11, 1959.

A technical session with Dr. William Blum as chairman will begin at 2:00 P.M. The program is as follows:

Causes and Remedies for the Corrosion of Nickel-Chromium Coatings, by Dr. W. Andrew Wesley, director of research, International Nickel Co., Inc.

Plating on Unusual Metals, by John G. Beach, of Battelle Memorial Institute.

Deposition of Unusual Metals, by Dr. Abner Brenner, chief, Electrodeposition Section, National Bureau of Standards.

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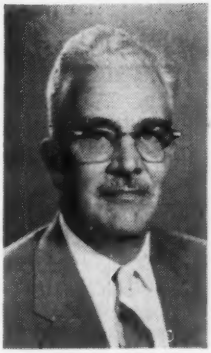
A banquet at 7:00 P.M. will commemorate the fiftieth anniversary of the organization meeting of the National Electro Platers Association, which was held in New York on April 10, 1909. Justus A. Stremel, one of the founding fathers, will be a guest of the branch.

The traditional "Pot" will be presented to the president of the A.E.S. It will be gold plated and inscribed, "A.E.S. Golden Jubilee, Herberth E. Head, Pres., 1959."

Feature speaker will be Dr. Hugh L. Dryden, deputy administrator, National Aeronautics and Space Administration. His subject will be *Some Problems of the Space Age.*

Those planning to attend the meeting should write to Arthur G. Pierdon, 12 L St., S.E., Washington 3, D. C., before March 28, 1959. Washington hotels will be very crowded but the Statler Hilton is holding rooms for guests that will attend the meeting.

Outing at Annual A.E.S. Convention to Feature Ox Roast

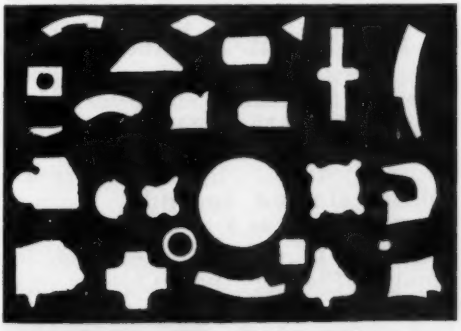


Robert Dudley

Robert Dudley, chairman of the Outing Committee for the Golden Jubilee Convention of the American Electroplaters' Society, has announced the program for this annual event.

Gambling with bogus money furnished by the convention committee will lead to valuable prizes (for the winners) and even the losers will be able to partake of the barbecued beef produced by an ox roast that will climax the day.

The Golden Jubilee Convention will be held in Detroit, Michigan, June 14-



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19, in conjunction with the Fifth International Conference on Electrodeposition and Metal Finishing and the Industrial Finishing Exposition.

Milwaukee Branch A.E.S. Annual Meeting

The Milwaukee Branch A.E.S. Annual Educational Session and Banquet will be held Saturday, April 25, at the Hotel Schroeder, Milwaukee.

The educational session begins at 1:30 P.M. Program is as follows:

Weathering Behavior of Nickel, Chromium, Nickel-Chromium Coatings, by Dr. W. Andrew Wesley, International Nickel Co., Inc.

The Role of Agitation in Electroplating, by Dr. R. B. Saltonstall, technical director of Udylite Corp.

Emulsion Coatings for Industrial Application, by Alex Andreoni, technical service director of The Glidden Co.

SOCIETIES

M. F. S. A. Elects Blount Treasurer

Ezra A. Blount, editor of PRODUCTS FINISHING, has been elected treasurer and trustee of the Metal Finishing Suppliers' Association, Inc. This position had been held for many years by the late Thomas A. Trumbour, general manager of "Metal Finishing."

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Mr. Blount has been associated with the electroplating and finishing industry for more than 30 years. He has been active in both the American Electroplaters' Society and M. F. S. A.

Ezra A. Blount

A chemical engineering graduate of the University of Cincinnati and a registered professional engineer, State of Ohio, he has been editor of PRODUCTS FINISHING for the past 11 years.

Long a member of the American Electroplaters' Society, Mr. Blount has been an officer of the Indianapolis Branch, and is a past president of the Cincinnati Branch. He assisted in the formation of the Tri-State Regional Group, A. E. S., and was co-chairman of the host committee for the 1958 A. E. S. Annual Convention. He has been guest speaker at many branch meetings and annual meetings, and at three A. E. S. National Conventions.

Giesel Elected Second V. P. of N.A.M.F.

Robert L. Giesel, president of Adolph Plating, Inc., Chicago, has been elected second vice president of the National Association of Metal Finishers.

R. L. Giesel

Former chairman of the Chicago Electro-Platers' Institute, affiliate of the N.A.M.F., Mr. Giesel at one time served as a director of the national organization.

Grand Rapids Branch Celebrates A. E. S. Golden Anniversary

The 21st Annual Educational Session and Dinner-Dance of the Grand Rapids Branch, A. E. S., held Jan. 17, commemorated the A. E. S. 50th Anniversary with a special program featuring A. E. S. national officers.

The mayor of Grand Rapids, having previously proclaimed Jan. 12 to 19 as American Electroplaters' Week in Grand Rapids, presented a golden key to the city to A. E. S. First Vice President R. D. Wysong.

John P. Nichols, A. E. S. executive secretary, complimented both the Grand Rapids Branch and Metal & Thermit Corp. for their joint sponsorship of the John J. Haney Paper Award, to be presented annually.

A. E. S. Third Vice President Chester G. Borlet spoke of the dedication and accomplishments of the Society in the last 50 years and predicted great strides for the future.

Donald H. Schantz (left), Chester G. Borlet and R. D. Wysong inspect the original charter of the Grand Rapids Branch, American Electroplaters' Society, which was issued in 1918. (Photograph courtesy of the Grand Rapids Branch, A. E. S.)

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The Educational Session featured a paper by Fred I. Nobel, Lea-Ronal, Inc., entitled "Recent Advancements in the Art of Cyanide Copper Plating." A reception, dinner and dance concluded the program.

Chicago Branch A. E. S. Annual Meeting

The 47th Annual Educational Program and Banquet held by the Chicago Branch on Jan. 31 was the occasion for a number of meetings and functions.

The Midwestern Regional Council of the A. E. S., National Association of Metal Finishers, and Metal Finishing Suppliers' Association, Inc., held meetings.

The Udylite Corp. held a reception followed by a luncheon for the job platers. Clyde H. Reeme, president of Udylite, in mentioning that Udylite is now 40 years old, forecast a great period of growth (Fig. 1). He predicted that keen competition would con-

Fig. 1—Clyde H. Reeme, Udylite president, addresses job platers. Larry George, district manager, (left) was master of ceremonies.

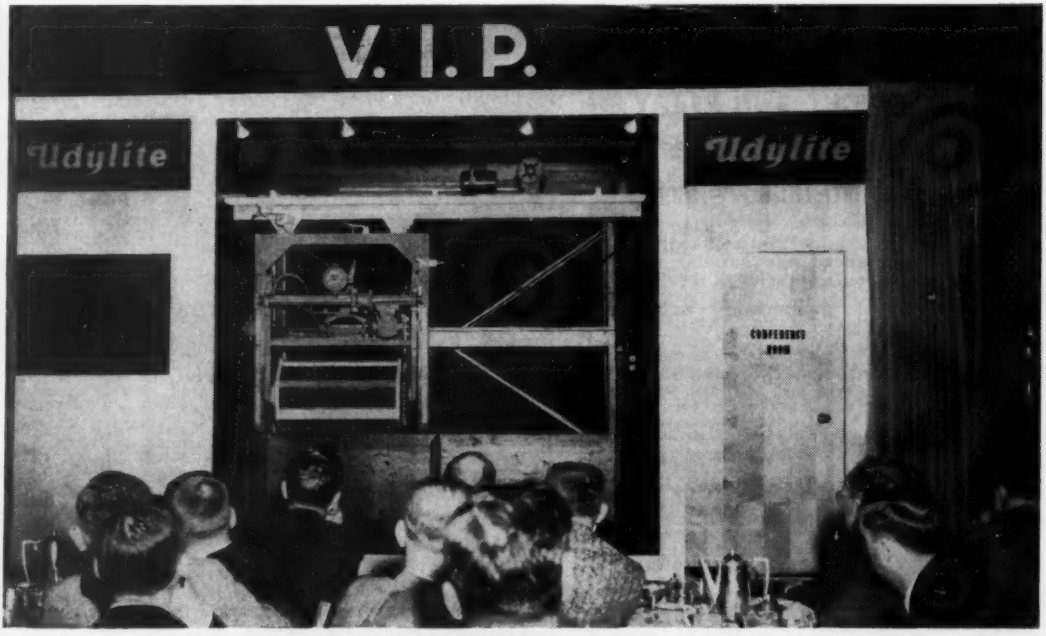

Fig. 2—Chicago job platers observe introduction of the Udylite V. I. P. barrel plating system. Presentation was illustrated by means of a full-sized, powered processing unit.

Fig. 3—Program chairman and speakers for the 49th Annual Educational Session of the Chicago Branch, American Electroplaters' Society. (Left to right): Joseph C. Corre, Amphenol-Borg Corp., program chairman; Dr. R. B. Saltonstall, Udylite Corp.; Myron B. Diggin, Hanson-Van Winkle-Munning Co.; Dr. M. M. Beckwith, Harshaw Chemical Co.; Simon P. Gary, Scientific Control Laboratories, Inc.; C. H. Sample, International Nickel Co., Inc.

Fig. 4—Officers, trustees, and guests photographed at the M. F. S. A. Trustees' meeting. Those present (left to right around the table) are H. D. McLeese, Metal & Thermit Corp., trustee; C. C. Helmle, Enthone Div., American Smelting & Refining Co., trustee; L. A. Davies, Davies Supply and Mfg. Co., trustee; R. M. Norton, Hanson-Van Winkle-Munning Co., trustee; A. P. Munning, Munning & Munning, Inc., executive secretary; E. W. Couch, Lea Manufacturing Co., president; Fred P. Green, Crown Rheostat & Supply Co., second vice president; R. F. Ledford, Chemray Corp., first vice president; Ralph D. Wysong, Studebaker-Packard Corp., A.E.S. first vice president; D. F. Mosher, Lea-Michigan, Inc. liaison representative for 1959 A. E. S. Convention; Harold W. Baker, Electro-Galvanizing Co., N.A.M.F. liaison representative; John P. Nichols, A.E.S. executive secretary; H. E. Head, Chrysler Corp, A. E. S. president. (Photographs by PRODUCTS FINISHING)

tinue to be the rule, and stressed the necessity of producing quality plating at low cost.

During the luncheon Udylite introduced V. I. P. (Variable Integrated Processing) setup for automatic barrel plating (Fig. 2). Operation and advantages of the machine were explained.

At the Educational Session, opened by Chicago Branch President R. Scott Modjeska, A. E. S. Honorary Members H. A. Gilbertson and John Lockerbie were introduced, as were A. E. S. officers H. E. Head, president, R. D. Wysong, first vice president, and John P. Nichols, executive secretary.

Simon P. Gary, associate director, Scientific Control Laboratories, Inc., Chicago, presented a talk entitled "Fifty Years of Plating Progress" which listed the many developments made in the industry during that period.

Joseph C. Corre, Amphenol-Borg Corp., served as program chairman for the Symposium on Modern Nickel Plating. Speakers (Fig. 3) and their subjects were as follows:

Nickel Electroforming, by Myron B. Diggin, vice president and technical director, Hanson-Van Winkle-Munning Co., Matawan, N. J.

Duplex Nickel Plating, by Dr. M. M. Beckwith, division manager, Harshaw Chemical Co., Cleveland, Ohio.

Protective Value of Nickel and Chromium in Bright Deposits, by C. H. Sample, supervisor, Electroplating Section, International Nickel Co., Bayonne, N. J.

Modern Bright Nickel as a Metal Finishing Tool, by Dr. R. B. Saltonstall, technical director, The Udylite Corp., Detroit, Mich.

The Metal Finishing Suppliers' Assn., Inc., held a meeting of the Board of Trustees (Fig. 4) which was attended by representatives from the N. A. M. F. and the A. E. S.

A. E. S. Dixie Regional Meeting

Led by Myron M. Randman, Wyandotte Chemicals Corp., general chairman, and Claude J. Nalley, Delta Air

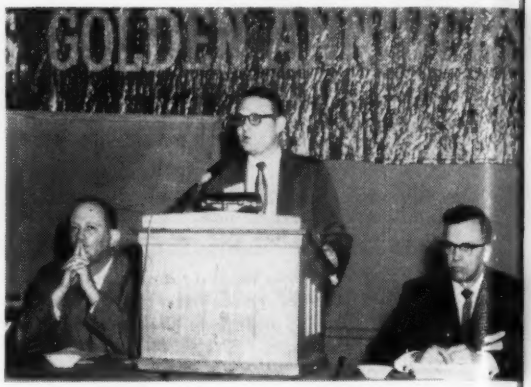

Fig. 1—Myron M. Randman, Wyandotte Chemicals Corp., general chairman, opens one of the educational sessions. Left to right: E. T. Logan, Southeastern Branch, session chairman; Mr. Randman; and speaker J. D. Thomas, of General Motors Research.

Fig. 2 — Howard J. McAleer, president of Formax Mfg. Corp. and chairman of the Industrial Finishing Exposition, to be held in Detroit June 15 to 19, reports to the delegates on the progress of the Exposition. Mr. McAleer stated that at present 130 exhibitors had requested space, and that the total exposition at present would occupy 100,000 sq. ft. of floor space. He indicated that this figure could increase substantially in the next three months. H. E. Head, Chrysler Corp., A. E. S. president, is at left.

Fig 3—Wright Wilson, Chrysler Corp., chairman of the A. E. S. Golden Jubilee Convention, reported that all arrangements had been completed for the meeting. Commenting particularly on the international nature of the technical program, Mr. Wilson complimented Walter L. Pinner, McGean Chemical Co., educational chairman, for having assembled so many excellent papers from the United States and foreign countries. Shown (left to right) are A.E.S. officers Chester G. Borlet, Grand Rapids Brass Co., third vice president; Dr. W. Andrew Wesley, International Nickel Co., second vice president; Francis T. Eddy, Technicraft Laboratories, Inc., past president; H. E. Head, Chrysler Corp., president; Mr. Wilson; R. D. Wysong, Studebaker-Packard Corp., first vice president.

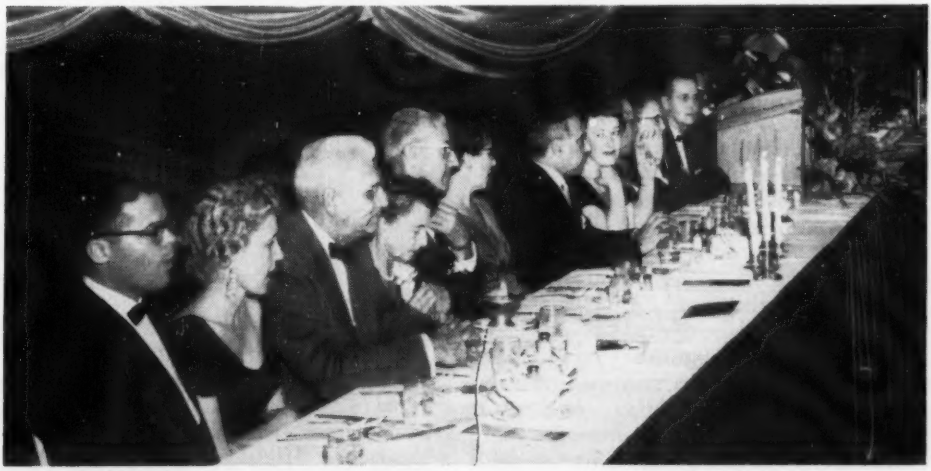

Fig. 4—View of the speakers' table at the banquet which concluded the Dixie Regional Meeting. (Photos by PRODUCTS FINISHING)

Lines, Branch president, the Southeastern Branch, A. E. S., acted as host to the Dixie Regional Meeting and the Sixth Interim Meeting, Feb. 13 and 14. The combined events attracted members and guests from Wichita, Kansas, Forth Worth, Texas, Boston, Detroit, Chicago, Miami, and intermediate points.

The Educational Program featured the following speakers and subjects:

Hard Anodizing of Aircraft Fuel Metering Components, by Dr. Harold J. Wiesner, research chemist, Bendix Products Div., Bendix Aviation Corp.

Alloy Plating, by R. T. Gore, Metal & Thermit Corp.

Corrosion and Protection of Metals, by Dr. Abner Brenner, chief, Electrodeposition Section, National Bureau of Standards.

Durability of Plating, by J. D. Thomas, senior research engineer, General Motors Research.

Following the conclusion of the Sixth Interim Meeting, the Dixie Regional Group sponsored a reception for all the members and guests. A banquet and entertainment concluded the successful meeting.

TRAINING COURSES

Spring Session of Binks School to Emphasize Latest Finishing Techniques

"The spring sessions of the Binks Manufacturing Company's spray painting school will provide detailed instruction on electrostatic spray systems, automatic finishing techniques, and several new equipment developments in the spray painting field," Burke B. Roche, president of the Chicago company announced recently.

The new equipment referred to includes an electro-mechanical memory timer, an eight-arm rotary sprayer, and vertical and horizontal reciprocating machines and spindle machines.

"Students will get a chance not only to learn how to make the best use of equipment, but will be taught the construction details, performance and maintenance features of complete spray painting systems," Mr. Roche explained. "This comprehensive education qualifies school graduates to handle competently most of the spray painting problems that may arise in his own plant or shop."

The Binks tuition-free school has scheduled spring sessions on the following dates: March 2-6, April 6-10, May 4-8, and June 1-5.

For reservations in the spring sessions, write B. J. Hedger, Binks Manufacturing Company, 3118-40 Carroll Ave., Chicago 12, Ill.

W. R. Brooks, chief instructor at the Binks spray painting school, demonstrates the use of memory timer to students.

Milwaukee Branch Plating Course Well Attended

A total of 33 men are enrolled for the course in electroplating being sponsored by the Milwaukee Branch of the American Electroplaters' Society. Lectures are being given on every Wednesday evening through March 11.

Instructors from branches of the A.E.S. and from Racine Adult and Vocational High School are teaching the course.

Titles of sessions being held are as follows: Principles of Chemistry and Principles of Chemical Analysis, by F. Rogers, chemistry instructor; Principles of Electricity, by A. Potthast, electrical instructor; Principles of Electrochemistry; Factors Governing the Character of Deposits, by Phil Ritzenthaler, Plating Engineering Co., Milwaukee; Preparation for Electroplating, by Arthur M. Linn, Metal &

Thermit Corporation, Kenosha, Wisconsin; Electrical and Plating Equipment, by Don Morris, Hanson-Van Winkle-Munning Co., Matawan, N. J.; Tests and Inspection—Solutions, Materials and Equipment, by Les Kocour, Kocour Co., Chicago; Plating Problems and New Developments, by L. L. Diveley, Cutler-Hammer Co., Milwaukee; Review and Test — The Road Ahead in Plating Training and Practice, by Arthur M. Linn and Rodney H. Olsen, Shephard Plating Co., Racine, Wisconsin.

Montreal Branch Sponsors Course in Electroplating

A course in electroplating has been established at Ecole Polytechnique in Montreal, Canada. The 13-week course has been set up with the Montreal Branch of the American Electroplaters' Society as sponsor. P. M. Coady, Coaton, Ltd., and Dr. John F. Kane, Canadian Arsenals, Ltd., have represented the branch in establishing the class.

Professor Andre Hone, head of the Department of Metallurgy, is the instructor. Dr. Hone has written all his lectures, which deal with fundamentals of chemistry and electrochemistry, not only in English, but also in French.

The class of 42 students is divided into two groups—one for the English-language course and one which hears the course conducted in French. Fee for the 13-week course is $50.00.

MEETINGS of INTEREST to FINISHERS

Mar. 17-19. 15th Annual Conference and Exhibition, National Association of Corrosion Engineers, Hotel Sherman, Chicago, Ill.

Mar. 21. Annual Educational Session and Banquet, Los Angeles Branch, A. E. S., Beverly-Hilton Hotel.

Apr. 4. Fifth Tri-State Regional Meeting, A. E. S., Host — Louisville Branch, Sheraton Hotel, Louisville, Ky.

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Apr. 11. Annual Banquet and Dance, Baltimore-Washington Branch, A. E. S., Hotel Statler, Washington, D. C.

Apr. 11. Empire State Regional Meeting, Host—Buffalo Branch, A. E. S., Hotel Peter Stuyvesant, Buffalo, New York.

Apr. 18. 20th New England Regional Meeting, Host—Waterbury Branch, A. E. S., Hotel Statler, Hartford, Conn.

Apr. 25. Annual Meeting and Banquet, Milwaukee Branch, A. E. S., Schroeder Hotel, Milwaukee, Wis.

May 2. 23rd Annual Technical Session and Banquet, Boston Branch, A. E. S., Hotel Statler, Boston, Mass.

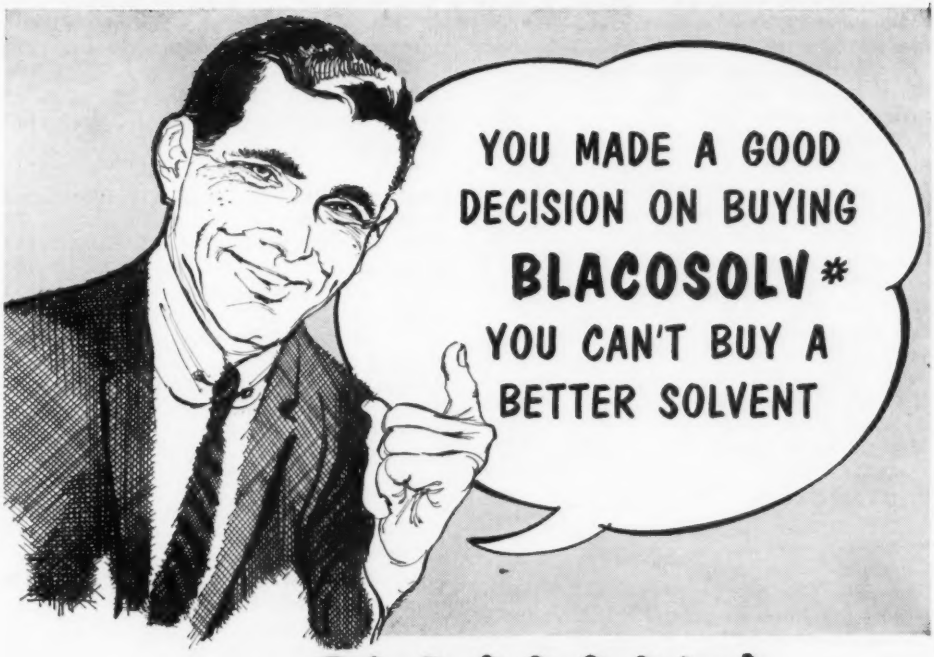
May 3-7. Spring Meeting, The Electrochemical Society, Sheraton Hotel, Philadelphia, Pa.

May 16. 41st Annual Banquet, Masters' Electro-Plating Association, Inc., Hotel Plaza, New York City.

June 14-19. Golden Jubilee Convention and Industrial Finishing Exposition, Fifth International Conference on Electrodeposition, Detroit, Mich.

The Finishing Touch — **By J. A. Patterson**

"Gus, old pal, would you mind turnin' on the water?"



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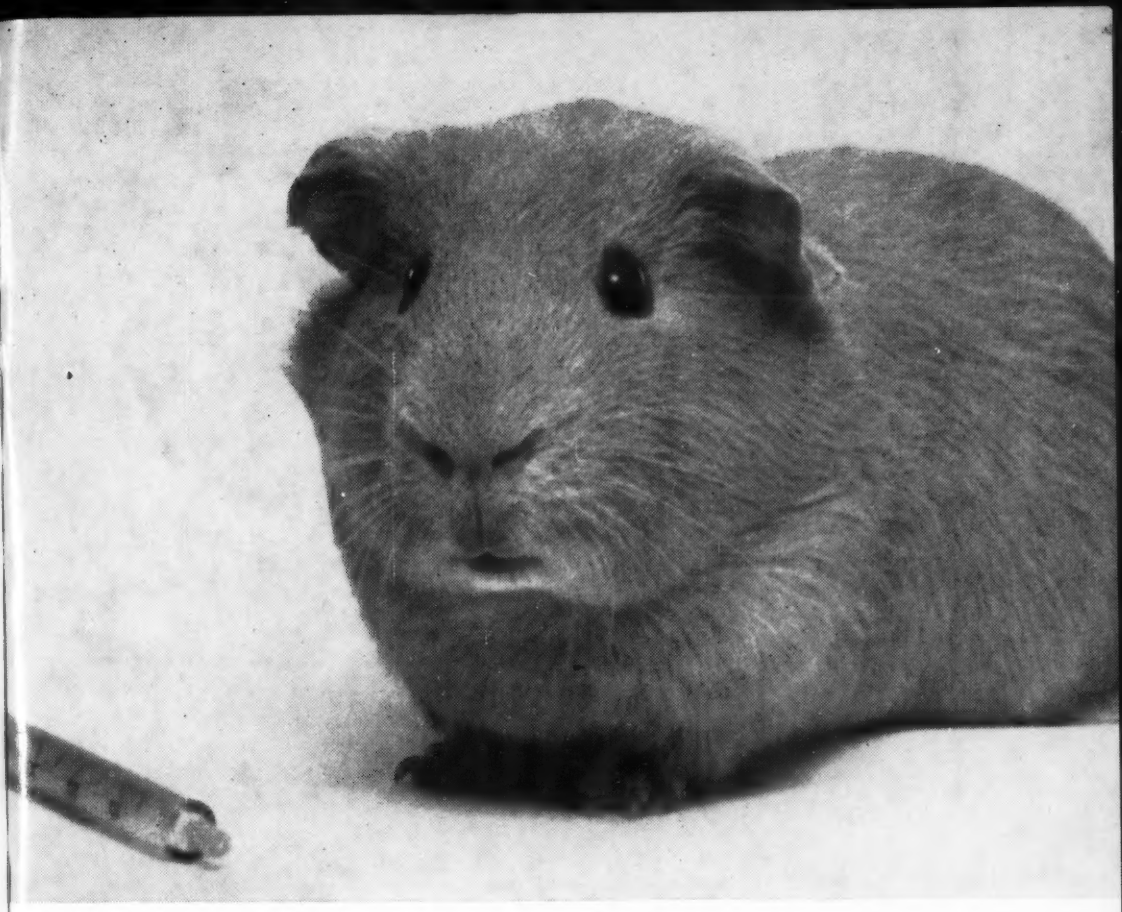

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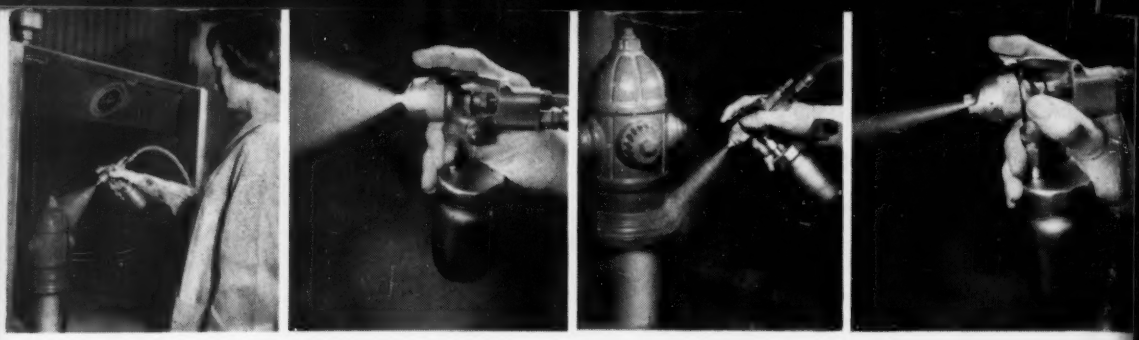

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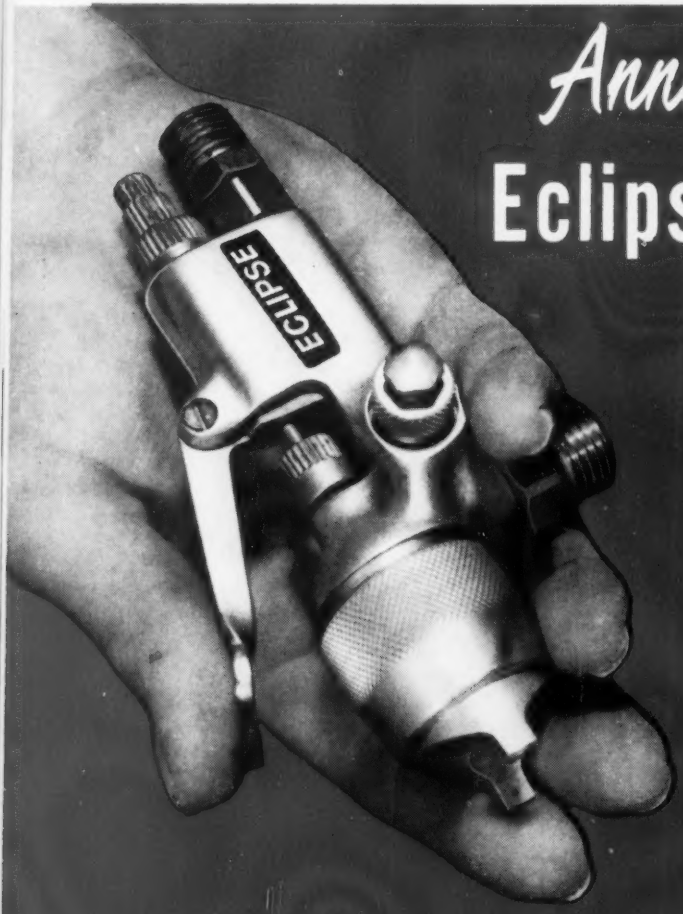

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